

SEP 04 2007

**MONITORING AND EMERGENCY WARNING
PLAN AND PROCEDURES** **OAK HILL**

For the:

**Brushy Fork Slurry Impoundment
WVDEP I.D. No. O-3010-95
MSHA I.D. No. 1211-WV4-0234-02**

Located at:

Pettus, Raleigh County, WV

Owned by:

**Marfork Coal Company
P.O. Box 457
Whitesville, WV 25209**

Issue Date: 10-23-06
Revision Date: 8-30-07
DEP Approval Date: 9/11/07

PLAN SUMMARY

The purpose of this document is to provide monitoring guidelines for the Brushy Fork Slurry Impoundment under various conditions so that emergencies may be handled properly. As described in this document, the monitoring plan has been divided into the following four categories:

- A **Normal Conditions** – Dam is inspected every 7 days.
- B **Adverse and Potentially Hazardous Conditions** – Dam is inspected daily, or more often as necessary, while appropriate action is take to eliminate condition.
- C **Standby Alert** – Dam has specific problems which could lead to failure. Constant surveillance of dam and notification to Offices of Emergency Services/911 (OES) in Raleigh and Boone Counties is required. Perform emergency repairs on the dam if possible and establish a communications network with OES personnel.
- D **Evacuation Conditions** – Dam may fail at any time. OES personnel to begin evacuation procedures.

If it is determined that the dam has specific problems that could lead to failure (Level C), Marfork Coal Company, Inc. personnel are responsible for providing immediate notification to the Offices of Emergency Services/911 in Raleigh and Boone Counties. This will allow OES personnel to begin making preparations in the event an evacuation becomes necessary. To help assist OES personnel during an emergency, below we have listed the estimated time it would take the flood wave to begin reaching communities downstream of the dam.

<u>Community</u>	<u>Distance from Dam (miles)</u>	<u>Estimated Arrival Time (minutes)</u>
Pettus	3.64	12
Whitesville	5.21	18
Seng Creek	6.91	24
Sylvester	8.05	36
Orgas	13.35	72 (or 1 hr, 12 min.)
Coopertown	15.05	84 (or 1 hr, 24 min.)
Fosterville	17.99	108 (or 1 hr, 48 min.)
Prenter Road	19.26	120 (or 2 hrs)
Comfort	21.16	135 (or 2 hrs, 15 min.)
Bloomingrose	23.27	150 (or 2 hrs, 30 min.)
Racine	25.48	180 (or 3 hrs)
Peytona	26.61	195 (or 3 hrs, 15 min.)

This plan was prepared by Geo/Environmental Associates, Inc., on behalf of Marfork Coal Company. Annual updates of the monitoring and emergency warning plan and DEP approval are required. Any questions should be directed to the owner or Geo/Environmental Associates, Inc.

Marfork Coal Company
P.O. Box 457
Whitesville, WV 25209
(304) 854-1852

Geo/Environmental Associates, Inc.
3502 Overlook Circle
Knoxville, TN 37909
(865) 584-0344

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PART I - MONITORING PLAN

Section A - Normal Conditions

Normal conditions consist of dry weather and occasional light rainfall. The areas to be inspected will include instrumentation monitoring and visual examination of the structure for structural weaknesses, status of impounding capacity, excessive erosion, clogging of outlet works, and other potentially hazardous conditions, including whirlpools in the impoundment, an unexpected drop in the impoundment level or a black water discharge from the Brushy Eagle mine portals, which could indicate a breakthrough into the underlying mine works. Seven-day reports shall be filed by the qualified person performing the inspections. These reports shall be retained at the operations office, and shall be made available for inspection by authorized representatives of WVDEP and MSHA.

ACTION

1. Inspect every 7 days and file report signed by qualified person who performed the examination.
2. If serious problem is found proceed immediately to section C or B as appropriate.

RESPONSIBILITY

Rodney Bazzie
Geo/Environmental Associates, Inc.
3502 Overlook Circle
Knoxville, TN 37909
Business Phone: (865) 584-0344
Home Phone: (304) 854-0032 or
(865) 694-0440
Mobile: (865) 803-5495
Pager: (800) 999-6710 – 993-4220

ALTERNATE:

Jason Dingess, Environmental Engineer
Marfork Coal Company
Marfork Road Route 3/1
Pettus, WV 25209
Business Phone: (304) 854-1761 or (304) 854-3521
Home Phone: (304) 854-1070

ALTERNATE:

Other qualified persons may inspect during normal conditions as necessary to accommodate scheduling.

Section B - Adverse and Potentially Hazardous Conditions

Adverse conditions consist of heavy or extended rainfall (i.e., >1 inch in 1 hour or 3 inches in 24-hours), a flash flood warning for the vicinity of the structure, or a heavy snow melt (i.e., >7 inches in 1 hour or 24 inches in 24-hours). When adverse conditions exist, the dam should be visually inspected for the following items: structural weaknesses, status of impounding capacity, excessive erosion, clogging of outlet works, and other potentially hazardous conditions, including whirlpools in the impoundment, an unexpected drop in the impoundment level or a black water discharge from the Brushy Eagle mine portals, which could indicate a breakthrough into the underlying mine works. Reports shall be filed by the qualified person that performed the inspections, shall be retained at the operations office, and shall be made available for inspection by authorized representatives of WVDEP and MSHA.

ACTION

1. Inspect daily, or more often as necessary, while adverse conditions exist and file a report signed by qualified person who performed the examination. If a potentially hazardous condition is identified during an inspection or if a potentially hazardous condition develops, take appropriate action to eliminate the potentially hazardous condition and proceed to Step 2. If no potentially hazardous conditions are identified and adverse conditions no longer exist, then resume routine inspection schedule as outlined in section A – Normal Conditions.
2. For a potentially hazardous condition, inspect every 8 hours or more as becomes necessary.
3. Notify responsible engineer,
Terry M. Harms
Geo/Environmental Associates, Inc
Business Phone: (865) 584-0344
4. Notify MSHA District Manager,
(304) 877-3900 or (800) 746-1554
5. Notify WVDEP Dam Control Coordinator,
(800) 642-3074
6. Notify and prepare to evacuate from property if necessary, all workers who may be affected, that are not required for repair work.
7. File report, which discusses the action taken to alleviate the hazardous conditions. A qualified person who performed the examination shall write report.
8. If problem is found, which could lead to failure, proceed immediately to section C or D, as conditions warrant. Otherwise, if the hazardous conditions have been alleviated, and adverse conditions no longer exist, then resume routine inspection schedule as outlined in section A – Normal Conditions.

RESPONSIBILITY

Paul McCombs, Chief Engineer
Marfork Coal Company
Marfork Road Route 3/1
Pettus, WV 25209
Business Phone: (304) 854-1761 or
(304) 854-3505
Home Phone: (304) 255-5647
Mobile Phone: (304) 784-9289
Pager: (304) 540-4387

ALTERNATE:

Jason Dingess, Environmental Engineer
Marfork Coal Company
Marfork Road Route 3/1
Pettus, WV 25209
Business Phone: (304) 854-1761 or
(304) 854-3521
Home Phone: (304) 854-1070

ALTERNATE:

Jonah Bowles, Safety Director
Marfork Coal Company
Marfork Road Route 3/1
Pettus, WV 25209
Business Phone: (304) 854-1852
Home Phone: (304) 595-2143
Pager: (304) 540-4388

Other qualified persons may inspect during adverse conditions as necessary to accommodate schedule.

Section C - Standby Alert

Dam has specific problems which could lead to failure. These conditions would include significant cracking of the embankment, significant increase in seepage zones, piping, etc. or a large whirlpool in the impoundment, an unexpected drop in the impoundment level or a black water discharge from the Brushy Eagle mine portals, which could indicate a breakthrough into the underlying mine works.

ACTION

1. Constant Surveillance.
2. Decrease reservoir level if possible.
3. Notify Agencies according to check list and wording on the following page.
4. Start emergency communication network, if necessary, based upon the continuing deterioration of site conditions.
5. Begin emergency repairs, if possible. Move auxiliary pumps to site and decant maximum amount of impoundment water through decant system and/or edge ditches along the downstream abutments of the dam. Attempt to seal any cracks by placement and compaction of refuse material. Divert water from seeps to the pipe spillway or a ditch along edge of abutment. Ensure that all diversion ditches are operating properly. Equipment at Marfork Coal Company shall be fully utilized for repair work.
6. As conditions warrant, OES personnel may want to begin notifying the public that an evacuation order may be given soon.
7. Notify and prepare to evacuate from property, if necessary, all workers who may be affected, that are not required for repair work.

RESPONSIBILITY

Paul McCombs, Chief Engineer
Marfork Coal Company
Marfork Road Route 3/1
Pettus, WV 25209
Business Phone: (304) 854-1761 or
(304) 854-3505
Home Phone: (304) 255-5647
Mobile Phone: (304) 784-9289
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Marfork Coal Company
Marfork Road Route 3/1
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Marfork Coal Company
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Pettus, WV 25209
Business Phone: (304) 854-1852
Home Phone: (304) 595-2143
Pager: (304) 540-4388

Standby Alert Notification

The responsible person shall phone each agency in sequence and deliver the following statement:

"This is responsible person of Marfork Coal Company advising you that we are starting constant surveillance of the Brushy Fork Slurry Impoundment according to the monitoring and emergency warning plan. We are notifying you, (see list below) of this condition, and will inform you if a decision to evacuate or cancellation of the surveillance has been made." Operators at 911 should initially contact Raleigh County and Boone County O.E.S. personnel such that a coordinated notification process and appropriate emergency planning/preparation is implemented.

Check When Notified

☐ Raleigh County O.E.S.
☐ Boone County O.E.S.
☐ MSHA Mt. Hope Office (District 4)
☐ WVDEP Dam Control Coordinator
☐ WVDEP Office of Mining and Reclamation
☐ Boone-Raleigh PSD
☐ Columbia Natural Resources (Natural Gas)

Telephone Number

(304) 255-0911 or 911
(304) 369-7273 or 911
(304) 877-3900 or (800) 746-1554
(800) 642-3074
(304) 465-1911 (Oak Hill)
(304) 854-1091
(304) 595-3569

Section D - Evacuation Conditions

Dam may fail at any time. Some specific site conditions would include overtopping of the dam, massive embankment cracking, substantial piping, spillway failure during flood, obvious deformation of the dam, etc., or a large whirlpool in the impoundment, an unexpected drop in the impoundment level or a black water discharge from the Brushy Eagle mine portals, which could indicate a breakthrough into the underlying mine works.

ACTION

1. Monitor dam conditions; issue evacuation order.
2. If evacuation order is given proceed immediately with Part II.

RESPONSIBILITY

WVDEP Office of Mining and Reclamation
Ed Wojtowicz
116 Industrial Drive; Oak Hill, WV 25901
Business Phone: (304) 465-1911

Dam Control Coordinator
WVDEP Office of Mining and Reclamation
601 57th Street, Charleston, WV 25304
Business Phone: (800) 642-3074 or (304) 926-0495

Jack Bowden, Director
Raleigh County Office of Emergency Services
P. O. Box 1513; Beckley, WV 25802
Business Phone: (304) 255-0911

Greg Lay, Director
Boone County O.E.S.
305 Moot Ave, Danville, WV 25053
Business Phone: (304) 369-7273 or 911

Paul McCombs, Marfork Coal Company
Marfork Road Route 3/1, Pettus, WV 25209
Business Phone: (304) 854-1761 or (304) 854-3505
Home Phone: (304) 255-5647
Mobile Phone: (304) 784-9289
Pager: (304) 540-4387

ALTERNATES:

Jason Dingess, Marfork Coal Company
Business Phone: (304) 854-1761 or (304) 854-3521
Home Phone: (304) 854-1070

Jonah Bowles, Marfork Coal Company
Business Phone: (304) 854-1852
Home Phone: (304) 595-2143
Pager: (304) 540-4388

PART II - EMERGENCY WARNING PLAN

Section A – Evacuation Notification

ACTION

1. Notify agencies according to check list and wording below.

RESPONSIBILITY

Paul McCombs, Chief Engineer
Marfork Coal Company
Marfork Road Route 3/1
Pettus, WV 25209
Business Phone: (304) 854-1761 or
(304) 854-3505
Home Phone: (304) 255-5647
Mobile Phone: (304) 784-9289
Pager: (304) 540-4387

ALTERNATE:

Jason Dingess, Environmental Engineer
Marfork Coal Company
Marfork Road Route 3/1
Pettus, WV 25209
Business Phone: (304) 854-1761 or
(304) 854-3521
Home Phone: (304) 854-1070

ALTERNATE:

Jonah Bowles, Safety Director
Marfork Coal Company
Marfork Road Route 3/1
Pettus, WV 25209
Business Phone: (304) 854-1852
Home Phone: (304) 595-2143
Pager: (304) 540-4388

Check When Notified

☐ Raleigh County O.E.S.	(304) 255-0911 or 911
☐ Boone County O.E.S.	(304) 369-7273 or 911
☐ MSHA Mt. Hope Office (District 4)	(304) 877-3900 or (800) 746-1554
☐ WVDEP Dam Control Coordinator	(800) 642-3074
☐ WVDEP Office of Mining and Reclamation (Oak Hill)	(304) 465-1911
☐ Boone-Raleigh PSD	(304) 854-1091
☐ Columbia Natural Resources (Natural Gas)	(304) 595-3569

Telephone Number

Evacuation Notification

The responsible person shall phone the Offices of Emergency Services/911 in Raleigh and Boone Counties and deliver the following statement: "This is responsible person of Marfork Coal Company notifying you that an evacuation order for the Brushy Fork Slurry Impoundment has been given by (person or agency issuing evacuation order) at (time). Evacuation of people downstream will commence according to the County Emergency Operations Plan." Operators at 911 should initially contact Raleigh County and Boone County O.E.S. personnel such that a coordinated notification process and appropriate emergency planning/preparation is implemented.

Section B - Evacuation

Once notification has been given by Marfork Coal Company to the Raleigh and Boone Counties Office of Emergency Services/911 to begin evacuation procedures (Section A), the O.E.S./911 offices will follow their respective County Emergency Operations Plan. Roadblocks should be established to assist in the evacuation process. Potential roadblock locations are identified on the Emergency Evacuation/Inundation Map. Notice to evacuate will be given personally to residents or by loudspeaker or bullhorn, or other means deemed necessary by the OES. If possible, evacuation teams and roadblock personnel should utilize radio contact throughout the evacuation process. The Office of Emergency Services will be the agency in charge once evacuation procedures have begun. The following measures will be implemented for an evacuation.

ACTION

1. Notification of downstream persons
2. Transportation of evacuees with priority to the infirm or disabled.
3. Establish command post directing emergency operations, all cooperating agencies and coordinate efforts.
4. Setup roadblocks to prevent unauthorized access.
5. Establish evacuation centers according to the County Emergency Operations Plan.
6. All utilities listed shall be notified that evacuation has commenced.

RESPONSIBILITY

Raleigh County O.E.S.	(304) 255-0911 or 911
Boone County O.E.S.	(304) 369-7273 or 911
Marfork Coal Company	(304) 854-1852

Check When Notified

☐ Verizon
☐ AT&T
☐ American Electric Power
☐ WV Department of Highways
☐ CSX Transportation
☐ North Coast Energy Eastern, Inc. (natural gas)
☐ Dominion Hope, Inc.
☐ WV American Water Company
☐ American Red Cross
☐ Raleigh Boone PSD

Telephone Number

(304) 343-9911
(800) 241-3624
(800) 982-4237
(304) 558-3505
(304) 369-5555 or (800) 232-0147
(304) 273-5371
(304) 464-4029
(304) 345-8660
(304) 340-3650
(304) 854-1091

PART III - POST EVACUATION ACTION

Section A - Cancellation of Evacuation

Should no failure occur and the hazard pass without incident, the evacuation order will be canceled. The WVDEP shall be responsible to declare that no hazard exists.

ACTION

1. Notify agencies according to checklist below.

RESPONSIBILITY

Marfork Coal Company

Check When Notified

- | | |
|--|---|
| ☐ Raleigh County O.E.S. | <u>Telephone Number</u>
(304) 255-0911 or 911 |
| ☐ Boone County O.E.S. | (304) 369-7273 or 911 |
| ☐ MSHA Mt. Hope Office (District 4) | (304) 877-3900 or (800) 746-1554 |
| ☐ WVDEP Dam Control Coordinator | (800) 642-3074 |
| ☐ WVDEP Office of Mining and Reclamation (Oak Hill) | (304) 465-1911 |

Section B - Failure of Dam or "Breakthrough" - Cleanup Operations - Agencies to be Notified

Should failure occur, Marfork Coal Company will immediately notify personnel from the Offices of Emergency Services for Raleigh and Boone counties. Implementation of the following post evacuation actions may be necessary.

ACTION

1. Evacuation Assistance to persons stranded in homes due to highway bridge washout.
2. Search and Rescue
3. Cleanup Crews and Equipment
4. Long-Term Lodging and Food relief.

RESPONSIBILITY

Marfork Coal Company
(304) 854-1761 or (304) 854-3505

Raleigh County O.E.S.
(304) 255-0911 or 911

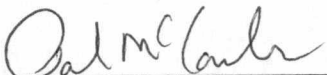
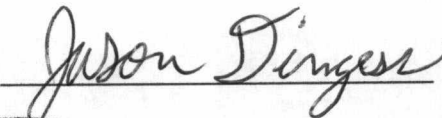
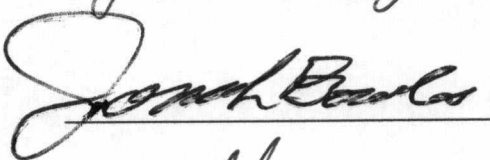
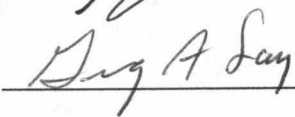
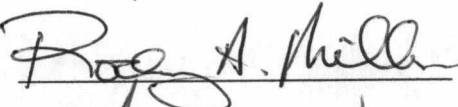
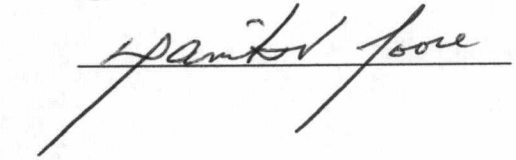
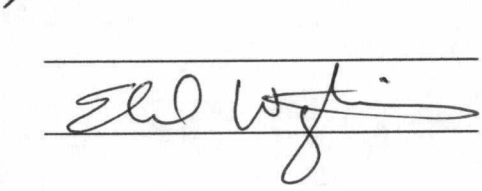
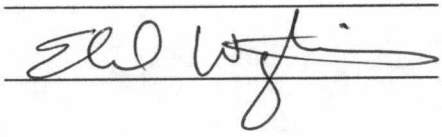
Boone County O.E.S.
(304) 369-7273 or 911

EMERGENCY EVACUATION MAP / INUNDATION MAP

The Emergency Evacuation/Inundation Map has been included in the following map pocket. This map shows the locations of the Brushy Fork Slurry Impoundment; potential evacuation routes and receiving centers; the hospital and medical treatment facilities; and the roadblocks.

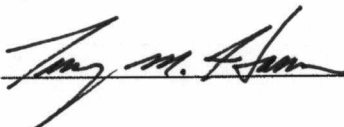
SIGNATURES

Signatures: The undersigned hereby state that they have read and understand the *Monitoring and Emergency Warning Plan and Procedures for the Brushy Fork Slurry Impoundment* (WVDEP I.D. No. O-3010-95; MSHA I.D. No. 1211-WV4-0234-02) and will carry out the tasks assigned to them.

<u>NAME</u>	<u>SIGNATURE</u>	<u>DATE</u>
Paul McCombs Marfork Coal Company Chief Engineer		<u>8-6-07</u>
Jason Dingess Marfork Coal Company Environmental Engineer		<u>8-6-07</u>
Jonah Bowles Marfork Coal Company Safety Director		<u>8-6-07</u>
Vedat Ozsever Marfork Coal Company Plant Superintendent		<u>8-6-07</u>
Boone County O.E.S.		<u>8-27-2007</u>
Boone County Sheriff		<u>8-27-07</u>
Raleigh County O.E.S.		<u>8-17-08</u>
Raleigh County Sheriff		<u>08-17-07</u>
Terry M. Harms Geo/Environmental Associates Preparer of Plan		<u>9-11-07</u>
Ed Wojtowicz WVDEP Approval		<u>9-11-07</u>

SIGNATURES

Signatures: The undersigned hereby state that they have read and understand the *Monitoring and Emergency Warning Plan and Procedures for the Brushy Fork Slurry Impoundment (WVDEP I.D. No. O-3010-95; MSHA I.D. No. 1211-WV4-0234-02)* and will carry out the tasks assigned to them.

<u>NAME</u>	<u>SIGNATURE</u>	<u>DATE</u>
Paul McCombs Marfork Coal Company Chief Engineer		
Jason Dingess Marfork Coal Company Environmental Engineer		
Jonah Bowles Marfork Coal Company Safety Director		
Vedat Ozsever Marfork Coal Company Plant Superintendent		
Boone County O.E.S.		
Boone County Sheriff		
Raleigh County O.E.S.		
Raleigh County Sheriff		
Terry M. Harms Geo/Environmental Associates Preparer of Plan		8/8/07
Ed Wojtowicz WVDEP Approval		

DISTRIBUTION LIST

Distribution:

Name and Address of Person or Agency

6 copies*	WV Division of Environmental Protection 116 Industrial Drive, Oak Hill, WV 25901
3 copies	Mine Safety and Health Administration 100 Bluestone Road, Mt. Hope, WV 25880-1000
1 copy	Raleigh County O.E.S., P. O. Box 1513, Beckley, WV 25801
1 copy	Raleigh County Sheriff's Department, 215 Main Street, Beckley, WV 25801
1 copy	Boone County O.E.S., 305 Moot Ave, Danville, WV 25053
1 copy	Boone County Sheriff's Department, Boone County Courthouse, Madison, WV 25130
1 copy	West Virginia Office of Emergency Services 1900 Kanawha Blvd., Bldg. 1 Room EB80 Charleston, WV 25305
2 copies	Geo/Environmental Associates, Inc. 3502 Overlook Circle Knoxville, TN 37909
4 copies	Marfork Coal Company, Inc. P.O. Box 457 Whitesville, WV 25209

*NOTE: Six (6) copies to be distributed by the Division of Environmental Protection. All other copies to be distributed by Marfork Coal Company, Inc.

APPENDIX I

GENERAL INFORMATION

GENERAL INFORMATION

Type and Location of Facility

The Brushy Fork Slurry Impoundment is a coal refuse disposal facility, which includes a coal refuse dam located at Raleigh County, West Virginia. The receiving stream is Brushy Fork, a tributary of Little Marsh Fork, a tributary of Marsh Fork, a tributary of Coal River. The dam is a Class C hazard dam. The coordinates at the crest of the Brushy Fork Slurry Impoundment are latitude 37° 55' 08" and longitude 81° 29' 10". This facility is located approximately 3.2 miles southwest of the Dorothy Post Office.

Brief Description of Dam and Problems

The Brushy Fork Slurry Impoundment is a coal refuse structure, which at the completion of the construction will be about 900 feet high, as measured from the toe to the crest. The maximum design and normal reservoir impoundment volume is about 25,100 and 22,700 acre-feet, respectively. Throughout construction, surcharge storage and a pipe spillway system will be used to safely pass runoff entering the impoundment. The proposed dam will have a minimum freeboard (vertical distance in feet between the normal reservoir elevation and the top of the dam) of 22 feet. A portion of the impoundment area upstream of the dam is underlain by mine works in the Eagle coal seam.

The Brushy Fork Slurry Impoundment is inspected by a qualified inspector at least once in every seven-day period and a registered professional engineer certifies the facility quarterly and annually.

This emergency warning plan was developed based on a potential breach of the embankment, or a breakthrough from the impoundment into the underlying Brushy Eagle mine workings in the Eagle coal seam.

Breach Analysis of Embankment

According to the criteria in the West Virginia Dam Safety Regulations, Section 3.5.2, the Brushy Fork Slurry Impoundment is classified as a Class C hazard dam. For a Class C dam, the West Virginia Division of Environmental Protection (WVDEP) recommends that a breach analysis be performed to evaluate the downstream impacts from a failure under normal operating conditions and during adverse weather (i.e., Probable Maximum Flood).

Upon review of the downstream area, it became apparent that the Probable Maximum Flood (PMF) occurring over the watershed would inundate the downstream area whether the dam breached or not. Therefore, because the failure of the dam during a PMF does not cause significant additional impact upon the downstream area, the breach analysis was performed for the normal operating conditions or "sunny day" breach. However, the pool level in the impoundment was conservatively assumed to be at the peak pool level (peak storage volume) resulting from the design storm (PMF).

The breach analysis was performed using Army Corps of Engineers' *HEC-1* Flood Hydrograph Package, 1990, and the National Weather Services' NWS DAMBRK model, 1988. The *HEC-1* analysis was performed to estimate the breach flows from the dam. Considering the conditions and geometry of the dam at the completion of the Stage 9 construction, published data concerning breach formations, and direction from the WVDEP the following breach parameters were conservatively selected:

- 1) a base width of 190 feet,
- 2) side slopes of 1.0 horizontal to 1.0 vertical,
- 3) time to breach of 0.5 hour, and,
- 4) a breach height of 190 feet was used.

The breach height was calculated based on the conditions at the completion of the Stage 9 embankment construction. A copy of the Stage 9 Plan View has been included herein. For this condition, the embankment crest elevation will be approximately 2050 feet, and the projected fine refuse pool elevation is 1890 feet. A bottom of breach elevation of 1860 feet (i.e., approximately 30 feet below the projected fine refuse pool elevation to account for fines that may flow from the impoundment) was conservatively assumed for the analyses. This is below the estimated fine refuse level at the completion of the Stage 8 embankment construction. Fine refuse below elevation 1860 feet is assumed to have consolidated so that they will not flow during a breach.

The resulting flows from the *HEC-1* dam breach (Appendix I) were used as the discharge hydrograph in the DAMBRK analysis. The following parameters were used in the DAMBRK analysis:

- 1) flow could be either subcritical or supercritical,
- 2) 22 cross sections were selected over a distance of 32.6 miles downstream, and,
- 3) Manning's coefficient "n" ranged from 0.06 for the flow area within the main channel to 0.10 for the flow area in the floodplain where vegetation would retard flow.

Bridges along the river reach were considered negligible. All cross sections except four were taken from 1" = 2000' USGS Quadrangle Maps. The other four cross sections were obtained from contour maps provided by Marfork Coal Company. These maps were developed by Photogrammetric Services, Inc., of Reynoldsburg, Ohio from aerial photographs dated April 6, 1992.

The results from the DAMBRK analysis (Appendix II) yielded a maximum flow of about 26,700 cubic feet per second (cfs) at Ashford, West Virginia. A regression equation developed by the U.S. Geologic Survey and published in the Hydrology of Area 9, Eastern Coal Province, West Virginia was used to evaluate the 100-year flood at Ashford, West Virginia to be 32,100 cfs. Therefore, since the flow resulting from the dam breach is less than the 100-year flood at Ashford, West Virginia, the breach analysis was discontinued. The Boone County Office of Emergency Services shall determine the extent of evacuation downstream of Ashford, WV based on their current flood evacuation procedures.

From the DAMBRK analysis, the resulting flows and water elevations have been used to predict the extent of flooding. A map is included at the end of this plan to show the areas where inundation is predicted. These areas would need to be evacuated in the event of a "sunny day" breach of the Brushy Fork Slurry Impoundment.

Analyses of Potential Breakthrough from Impoundment into Brushy Eagle Mine

The consequences of a breakthrough are based primarily on four factors; the location of the breakthrough, the size of the breakthrough, the total volume of water/slurry that flows into and out of the mine works, and the location(s) where the water/slurry eventually exits the mine works. Because an exact answer to these four factors cannot be determined, it is difficult to evaluate the effect a

breakthrough at this facility would have on the downstream communities. Having said the above, for the purpose of defining the areas and persons which could be affected by a breakthrough of the impoundment into and out of the underground mine works, engineering judgment has been used to evaluate the above factors and assess breakthrough scenarios that could potentially occur.

The location of where a breakthrough would occur in the pool area is probably the most difficult factor to evaluate. Based on the overall proximity of the Eagle mine works to the pool area, there is not a reasonable basis for predicting a location in the pool area where a breakthrough would most likely occur. Therefore, it is assumed that a breakthrough could occur anywhere, and the downstream effects need to be evaluated accordingly.

In order to estimate the areas and persons which could be affected by a breakthrough from the impoundment into the underlying Brushy Eagle mine, we reviewed available mine mapping, and considered the following items:

- Approximately the upper 30 feet of the material in the impoundment will be flowable. The remaining material in the impoundment is settled/consolidated fine refuse material.
- The flowable material in the impoundment pool will be between about 350 to 700 feet from the mine workings, of which about 170 feet is rock. Also, at the completion of Stage 9 upstream fill construction, in addition to the 170 feet of natural rock at least 100 feet to 200 feet of coarse refuse will exist between the impoundment pool and the mine workings.
- Approximately the upper 30 feet of the material in the impoundment will be flowable. The remaining material in the impoundment is settled/consolidated fine refuse material.
- The shortest flow path through the mine will be about 8000 feet, based on a straight line distance from the impoundment to the nearest mine portal.
- Although discharge from the mine through multiple portals could occur, it would likely occur through one of the two mine portals located in the Little Marsh Fork hollow (Mine Portals #7 & #8 on the inundation and evacuation map).
- The flow could possibly discharge from all mine portals and/or outcrop barriers.
- The flow through the mine will likely be impeded and spread within the mine.

Although the breakthrough potential at this site is low, if breakthrough were to occur, it would most likely be into the Brushy Eagle mine beneath the impoundment. Further, considering that over 170 feet of natural rock cover exists above the mine workings, if breakthrough were to occur, it is very unlikely to result in a sudden inrush of water/slurry into the mine. Accordingly, if breakthrough were to occur, it would most likely be relatively small in size (i.e., subsidence cracks), which will limit the amount of water/slurry that would likely flow into and out of the Eagle seam mine workings.

The location(s) where the water/slurry would eventually exit the mine works if breakthrough occurred will primarily depend on the drainage patterns within the Brushy Eagle underground mine. Based on the mine map (see inundation/evacuation map), although discharge from the mine through multiple portals could occur, it would likely occur through one of the two mine portals located in the Little Marsh Fork hollow (Mine Portals #7 & #8 on the inundation and evacuation map), thereby, for the purposes of this plan, limiting the effects on primarily the areas and persons located within the Little Marsh Fork hollow. However, provisions have been included to address the potential impacts on other areas located downstream of the Brushy Eagle mine workings.

APPENDIX II

HEC-1 BREACH HYDROGRAPH COMPUTATIONS (STAGE 9)


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*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* SEPTEMBER 1990 *
* VERSION 4.0 *
* RUN DATE 02/17/2003 TIME 11:41:22 *
*****

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*****
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
*****

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*****
* STAGE 9 CREST ELEV. = 2050' 2025' NORMAL POOL *
* SUNNY DAY BREACH ANALYSIS *
* BRUSHY FORK SLURRY IMPOUNDMENT FILE: BRSDBR.DAT *
* MARFORK COAL COMPANY GA FILE: 96-591 *
*****
* ANALYSIS BY: GEO/ENVIRONMENTAL ASSOCIATES, INC. *
* KNOXVILLE, TENNESSEE *
* FEBRUARY, 2003 *
* SAB *
*****

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17 IO OUTPUT CONTROL VARIABLES
      IPRINT 3 PRINT CONTROL
      IPLOT 0 PLOT CONTROL
      QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA
      NMIN 5 MINUTES IN COMPUTATION INTERVAL
      IDATE 1 0 STARTING DATE
      ITIME 0000 STARTING TIME
      NQ 300 NUMBER OF HYDROGRAPH ORDINATES
      NDDATE 2 0 ENDING DATE
      NDTIME 0055 ENDING TIME
      ICENT 19 CENTURY MARK

      COMPUTATION INTERVAL .08 HOURS
      TOTAL TIME BASE 24.92 HOURS

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ENGLISH UNITS
DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-Feet
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

```

USER-DEFINED OUTPUT SPECIFICATIONS

TABLE 1		IMP	IMP	IMP							
VS	STATION	2.11	6.11	7.11	.00	.00	.00	.00	.00	.00	.00
VV	VARIABLE CODE										

*** **

 * * *
 20 KK * IMP * BRUSHY FORK SLURRY IMPOUNDMENT
 * * *

ROUTE COMPUTED HYDROGRAPH THROUGH IMPOUNDMENT/ BREACH

HYDROGRAPH ROUTING DATA

22 RS STORAGE ROUTING
 NSTPS 1 NUMBER OF SUBREACHES
 ITYP ELEV TYPE OF INITIAL CONDITION
 RSVRIC 2050.00 INITIAL CONDITION
 X .00 WORKING R AND D COEFFICIENT

23 SA AREA 41.0 44.5 47.2 50.0 52.8 55.8 58.8 62.5 67.2 71.4
 75.9 80.7 85.0 92.7 105.0 115.3 125.8 135.3 142.8 149.5

25 SQ DISCHARGE 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

27 SE ELEVATION 1860.00 1870.00 1880.00 1890.00 1900.00 1910.00 1920.00 1930.00 1940.00 1950.00
 1960.00 1970.00 1980.00 1990.00 2000.00 2010.00 2020.00 2030.00 2040.00 2050.00

29 ST TOP OF DAM
 TOPEL 2050.00 ELEVATION AT TOP OF DAM
 DAMWID 1800.00 DAM WIDTH
 COCD 3.00 WEIR COEFFICIENT
 EXPD 1.50 EXPONENT OF HEAD

30 SB BREACH DATA
 ELBM 1860.00 ELEVATION AT BOTTOM OF BREACH
 BRWID 190.00 WIDTH OF BREACH BOTTOM
 Z 1.00 BREACH SIDE SLOPE
 TFAIL .50 TIME FOR BREACH TO DEVELOP
 FAILL 2050.00 W.S. ELEVATION TO TRIGGER FAILURE

COMPUTED STORAGE-ELEVATION DATA

		.00	427.13	885.46	1371.40	1885.43	2428.52	3001.25	3607.61	4255.87	4948.46
STORAGE											
ELEVATION	1860.00	1870.00	1880.00	1890.00	1900.00	1910.00	1920.00	1930.00	1940.00	1950.00	
STORAGE	5684.94	6468.17	7301.48	8194.67	9182.53	10283.38	11488.55	12793.76	14183.89	15645.17	
ELEVATION	1960.00	1970.00	1980.00	1990.00	2000.00	2010.00	2020.00	2030.00	2040.00	2050.00	

BEGIN DAM FAILURE AT .00 HOURS

*** *** *** *** ***

HYDROGRAPH AT STATION IMP

PEAK OUTFLOW IS 528857. AT TIME .39 HOURS

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)				
+ 516831.	.42		31967.	7995.	7701.	7701.
		(INCHES)	.000	.000	.000	.000
		(AC-FT)	15851.	15857.	15857.	15857.
PEAK STORAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
15645.	.08		1093.	274.	264.	264.
PEAK STAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
2050.00	.01		1875.56	1863.92	1863.77	1863.77
CUMULATIVE AREA =			.00 SQ MI			

1
 RUNOFF SUMMARY
 FLOW IN CUBIC FEET PER SECOND
 TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
ROUTED TO	IMP	516831.	.42	31967.	7995.	7701.	.00	2050.00	.01

SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION IMP
 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1	ELEVATION		INITIAL VALUE	SPILLWAY CREST	TOP OF DAM				
	STORAGE		2050.00	2050.00	2050.00				
	OUTFLOW		15645.	15645.	15645.				
			0.	0.	0.				
	RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS	
	1.00	2050.00	.00	15645.	528867.	.00	.39	.00	

TABLE 1			STATION	IMP FLOW	IMP STORAGE	IMP STAGE
PER	DAY	MON	HRMN			
1	1		0000	.00	15645.17	2050.00
2	1		0005	30373.19	15584.10	2049.59
3	1		0010	153640.20	15003.69	2045.67
4	1		0015	339476.60	13318.32	2033.84
5	1		0020	495481.80	10395.50	2010.97
6	1		0025	516831.30	6813.14	1974.22
7	1		0030	428287.50	3524.41	1928.66
8	1		0035	152186.50	1729.44	1897.02
9	1		0040	69329.78	1014.45	1882.71
10	1		0045	36991.07	663.38	1875.23
11	1		0050	21947.64	466.26	1870.88
12	1		0055	14044.55	344.94	1868.14
13	1		0100	9503.06	265.18	1866.30
14	1		0105	6717.11	210.05	1865.02
15	1		0110	4917.85	170.41	1864.09
16	1		0115	3705.68	140.98	1863.39
17	1		0120	2860.29	118.54	1862.86
18	1		0125	2253.04	101.05	1862.44
19	1		0130	1805.74	87.15	1862.11
20	1		0135	1469.11	75.92	1861.84
21	1		0140	1211.06	66.73	1861.62
22	1		0145	1009.97	59.11	1861.43
23	1		0150	851.05	52.72	1861.28
24	1		0155	723.67	47.31	1861.15
25	1		0200	620.53	42.69	1861.04
26	1		0205	536.10	38.72	1860.94
27	1		0210	466.18	35.27	1860.86
28	1		0215	407.99	32.27	1860.78
29	1		0220	359.03	29.63	1860.72
30	1		0225	317.64	27.31	1860.66
31	1		0230	282.37	25.24	1860.61
32	1		0235	252.15	23.41	1860.57
33	1		0240	226.08	21.76	1860.53
34	1		0245	203.54	20.29	1860.49
35	1		0250	183.78	18.95	1860.46
36	1		0255	166.54	17.75	1860.43
37	1		0300	151.44	16.66	1860.41
38	1		0305	138.03	15.66	1860.38
39	1		0310	126.20	14.75	1860.36
40	1		0315	115.66	13.92	1860.34
41	1		0320	106.23	13.15	1860.32
42	1		0325	97.84	12.45	1860.30
43	1		0330	90.25	11.80	1860.29
44	1		0335	83.49	11.20	1860.27
45	1		0340	77.40	10.65	1860.26
46	1		0345	71.84	10.13	1860.25
47	1		0350	66.78	9.65	1860.24
48	1		0355	62.25	9.21	1860.22
49	1		0400	58.13	8.80	1860.21
50	1		0405	54.30	8.41	1860.20

TABLE 1 STATION
(CONT.)

PER	DAY	MON	HR:MIN	IMP. FLOW	IMP. STORAGE	IMP. STAGE
51	1		0410	50.84	8.04	1860.20
52	1		0415	47.69	7.71	1860.19
53	1		0420	44.74	7.39	1860.18
54	1		0425	42.08	7.09	1860.17
55	1		0430	39.61	6.81	1860.17
56	1		0435	37.28	6.54	1860.16
57	1		0440	35.24	6.30	1860.15
58	1		0445	33.24	6.06	1860.15
59	1		0450	31.40	5.83	1860.14
60	1		0455	29.80	5.63	1860.14
61	1		0500	28.22	5.43	1860.13
62	1		0505	26.68	5.23	1860.13
63	1		0510	25.35	5.06	1860.12
64	1		0515	24.15	4.90	1860.12
65	1		0520	22.98	4.74	1860.12
66	1		0525	21.82	4.58	1860.11
67	1		0530	20.68	4.42	1860.11
68	1		0535	19.78	4.29	1860.10
69	1		0540	18.95	4.17	1860.10
70	1		0545	18.13	4.05	1860.10
71	1		0550	17.33	3.93	1860.10
72	1		0555	16.54	3.81	1860.09
73	1		0600	15.77	3.68	1860.09
74	1		0605	15.00	3.56	1860.09
75	1		0610	14.34	3.46	1860.08
76	1		0615	13.85	3.38	1860.08
77	1		0620	13.36	3.30	1860.08
78	1		0625	12.87	3.22	1860.08
79	1		0630	12.40	3.14	1860.08
80	1		0635	11.92	3.06	1860.07
81	1		0640	11.46	2.98	1860.07
82	1		0645	11.00	2.90	1860.07
83	1		0650	10.55	2.82	1860.07
84	1		0655	10.10	2.74	1860.07
85	1		0700	9.66	2.66	1860.06
86	1		0705	9.23	2.58	1860.06
87	1		0710	8.80	2.50	1860.06
88	1		0715	8.54	2.45	1860.06
89	1		0720	8.33	2.41	1860.06
90	1		0725	8.12	2.37	1860.06
91	1		0730	7.92	2.33	1860.06
92	1		0735	7.71	2.29	1860.06
93	1		0740	7.51	2.25	1860.05
94	1		0745	7.31	2.21	1860.05
95	1		0750	7.11	2.17	1860.05
96	1		0755	6.92	2.13	1860.05
97	1		0800	6.72	2.09	1860.05
98	1		0805	6.53	2.05	1860.05
99	1		0810	6.34	2.01	1860.05
100	1		0815	6.15	1.97	1860.05

TABLE 1 STATION
(CONT.)

PER	DAY	MON	HRMN	IMP FLOW	IMP STORAGE	IMP STAGE
101	1		0820	5.96	1.93	1860.05
102	1		0825	5.78	1.89	1860.05
103	1		0830	5.60	1.85	1860.05
104	1		0835	5.41	1.81	1860.04
105	1		0840	5.24	1.77	1860.04
106	1		0845	5.06	1.73	1860.04
107	1		0850	4.88	1.69	1860.04
108	1		0855	4.71	1.65	1860.04
109	1		0900	4.54	1.61	1860.04
110	1		0905	4.37	1.57	1860.04
111	1		0910	4.20	1.53	1860.04
112	1		0915	4.04	1.49	1860.04
113	1		0920	3.88	1.45	1860.04
114	1		0925	3.72	1.41	1860.03
115	1		0930	3.56	1.37	1860.03
116	1		0935	3.41	1.33	1860.03
117	1		0940	3.25	1.29	1860.03
118	1		0945	3.10	1.25	1860.03
119	1		0950	2.95	1.21	1860.03
120	1		0955	2.92	1.20	1860.03
121	1		1000	2.92	1.20	1860.03
122	1		1005	2.92	1.20	1860.03
123	1		1010	2.92	1.20	1860.03
124	1		1015	2.92	1.20	1860.03
125	1		1020	2.92	1.20	1860.03
126	1		1025	2.92	1.20	1860.03
127	1		1030	2.92	1.20	1860.03
128	1		1035	2.92	1.20	1860.03
129	1		1040	2.92	1.20	1860.03
130	1		1045	2.92	1.20	1860.03
131	1		1050	2.92	1.20	1860.03
132	1		1055	2.92	1.20	1860.03
133	1		1100	2.92	1.20	1860.03
134	1		1105	2.92	1.20	1860.03
135	1		1110	2.92	1.20	1860.03
136	1		1115	2.92	1.20	1860.03
137	1		1120	2.92	1.20	1860.03
138	1		1125	2.92	1.20	1860.03
139	1		1130	2.92	1.20	1860.03
140	1		1135	2.92	1.20	1860.03
141	1		1140	2.92	1.20	1860.03
142	1		1145	2.92	1.20	1860.03
143	1		1150	2.92	1.20	1860.03
144	1		1155	2.92	1.20	1860.03
145	1		1200	2.92	1.20	1860.03
146	1		1205	2.92	1.20	1860.03
147	1		1210	2.92	1.20	1860.03
148	1		1215	2.92	1.20	1860.03
149	1		1220	2.92	1.20	1860.03
150	1		1225	2.92	1.20	1860.03

TABLE 1 STATION
(CONT.)

PER	DAY	MON	HR/MN	IMP FLOW	IMP STORAGE	IMP STAGE
151	1		1230	2.92	1.20	1860.03
152	1		1235	2.92	1.20	1860.03
153	1		1240	2.92	1.20	1860.03
154	1		1245	2.92	1.20	1860.03
155	1		1250	2.92	1.20	1860.03
156	1		1255	2.92	1.20	1860.03
157	1		1300	2.92	1.20	1860.03
158	1		1305	2.92	1.20	1860.03
159	1		1310	2.92	1.20	1860.03
160	1		1315	2.92	1.20	1860.03
161	1		1320	2.92	1.20	1860.03
162	1		1325	2.92	1.20	1860.03
163	1		1330	2.92	1.20	1860.03
164	1		1335	2.92	1.20	1860.03
165	1		1340	2.92	1.20	1860.03
166	1		1345	2.92	1.20	1860.03
167	1		1350	2.92	1.20	1860.03
168	1		1355	2.92	1.20	1860.03
169	1		1400	2.92	1.20	1860.03
170	1		1405	2.92	1.20	1860.03
171	1		1410	2.92	1.20	1860.03
172	1		1415	2.92	1.20	1860.03
173	1		1420	2.92	1.20	1860.03
174	1		1425	2.92	1.20	1860.03
175	1		1430	2.92	1.20	1860.03
176	1		1435	2.92	1.20	1860.03
177	1		1440	2.92	1.20	1860.03
178	1		1445	2.92	1.20	1860.03
179	1		1450	2.92	1.20	1860.03
180	1		1455	2.92	1.20	1860.03
181	1		1500	2.92	1.20	1860.03
182	1		1505	2.92	1.20	1860.03
183	1		1510	2.92	1.20	1860.03
184	1		1515	2.92	1.20	1860.03
185	1		1520	2.92	1.20	1860.03
186	1		1525	2.92	1.20	1860.03
187	1		1530	2.92	1.20	1860.03
188	1		1535	2.92	1.20	1860.03
189	1		1540	2.92	1.20	1860.03
190	1		1545	2.92	1.20	1860.03
191	1		1550	2.92	1.20	1860.03
192	1		1555	2.92	1.20	1860.03
193	1		1600	2.92	1.20	1860.03
194	1		1605	2.92	1.20	1860.03
195	1		1610	2.92	1.20	1860.03
196	1		1615	2.92	1.20	1860.03
197	1		1620	2.92	1.20	1860.03
198	1		1625	2.92	1.20	1860.03
199	1		1630	2.92	1.20	1860.03
200	1		1635	2.92	1.20	1860.03

TABLE 1 STATION
(CONT.)

PER	DAY	MON	HRMN	IMP FLOW	IMP STORAGE	IMP STAGE
201	1		1640	2.92	1.20	1860.03
202	1		1645	2.92	1.20	1860.03
203	1		1650	2.92	1.20	1860.03
204	1		1655	2.92	1.20	1860.03
205	1		1700	2.92	1.20	1860.03
206	1		1705	2.92	1.20	1860.03
207	1		1710	2.92	1.20	1860.03
208	1		1715	2.92	1.20	1860.03
209	1		1720	2.92	1.20	1860.03
210	1		1725	2.92	1.20	1860.03
211	1		1730	2.92	1.20	1860.03
212	1		1735	2.92	1.20	1860.03
213	1		1740	2.92	1.20	1860.03
214	1		1745	2.92	1.20	1860.03
215	1		1750	2.92	1.20	1860.03
216	1		1755	2.92	1.20	1860.03
217	1		1800	2.92	1.20	1860.03
218	1		1805	2.92	1.20	1860.03
219	1		1810	2.92	1.20	1860.03
220	1		1815	2.92	1.20	1860.03
221	1		1820	2.92	1.20	1860.03
222	1		1825	2.92	1.20	1860.03
223	1		1830	2.92	1.20	1860.03
224	1		1835	2.92	1.20	1860.03
225	1		1840	2.92	1.20	1860.03
226	1		1845	2.92	1.20	1860.03
227	1		1850	2.92	1.20	1860.03
228	1		1855	2.92	1.20	1860.03
229	1		1900	2.92	1.20	1860.03
230	1		1905	2.92	1.20	1860.03
231	1		1910	2.92	1.20	1860.03
232	1		1915	2.92	1.20	1860.03
233	1		1920	2.92	1.20	1860.03
234	1		1925	2.92	1.20	1860.03
235	1		1930	2.92	1.20	1860.03
236	1		1935	2.92	1.20	1860.03
237	1		1940	2.92	1.20	1860.03
238	1		1945	2.92	1.20	1860.03
239	1		1950	2.92	1.20	1860.03
240	1		1955	2.92	1.20	1860.03
241	1		2000	2.92	1.20	1860.03
242	1		2005	2.92	1.20	1860.03
243	1		2010	2.92	1.20	1860.03
244	1		2015	2.92	1.20	1860.03
245	1		2020	2.92	1.20	1860.03
246	1		2025	2.92	1.20	1860.03
247	1		2030	2.92	1.20	1860.03
248	1		2035	2.92	1.20	1860.03
249	1		2040	2.92	1.20	1860.03
250	1		2045	2.92	1.20	1860.03

TABLE 1 ...STATION
(CONT.)

PER	DAY	MON	HRMN	IMP FLOW	IMP STORAGE	IMP STAGE
251	1		2050	2.92	1.20	1860.03
252	1		2055	2.92	1.20	1860.03
253	1		2100	2.92	1.20	1860.03
254	1		2105	2.92	1.20	1860.03
255	1		2110	2.92	1.20	1860.03
256	1		2115	2.92	1.20	1860.03
257	1		2120	2.92	1.20	1860.03
258	1		2125	2.92	1.20	1860.03
259	1		2130	2.92	1.20	1860.03
260	1		2135	2.92	1.20	1860.03
261	1		2140	2.92	1.20	1860.03
262	1		2145	2.92	1.20	1860.03
263	1		2150	2.92	1.20	1860.03
264	1		2155	2.92	1.20	1860.03
265	1		2200	2.92	1.20	1860.03
266	1		2205	2.92	1.20	1860.03
267	1		2210	2.92	1.20	1860.03
268	1		2215	2.92	1.20	1860.03
269	1		2220	2.92	1.20	1860.03
270	1		2225	2.92	1.20	1860.03
271	1		2230	2.92	1.20	1860.03
272	1		2235	2.92	1.20	1860.03
273	1		2240	2.92	1.20	1860.03
274	1		2245	2.92	1.20	1860.03
275	1		2250	2.92	1.20	1860.03
276	1		2255	2.92	1.20	1860.03
277	1		2300	2.92	1.20	1860.03
278	1		2305	2.92	1.20	1860.03
279	1		2310	2.92	1.20	1860.03
280	1		2315	2.92	1.20	1860.03
281	1		2320	2.92	1.20	1860.03
282	1		2325	2.92	1.20	1860.03
283	1		2330	2.92	1.20	1860.03
284	1		2335	2.92	1.20	1860.03
285	1		2340	2.92	1.20	1860.03
286	1		2345	2.92	1.20	1860.03
287	1		2350	2.92	1.20	1860.03
288	1		2355	2.92	1.20	1860.03
289	2		0000	2.92	1.20	1860.03
290	2		0005	2.92	1.20	1860.03
291	2		0010	2.92	1.20	1860.03
292	2		0015	2.92	1.20	1860.03
293	2		0020	2.92	1.20	1860.03
294	2		0025	2.92	1.20	1860.03
295	2		0030	2.92	1.20	1860.03
296	2		0035	2.92	1.20	1860.03
297	2		0040	2.92	1.20	1860.03
298	2		0045	2.92	1.20	1860.03
299	2		0050	2.92	1.20	1860.03
300	2		0055	2.92	1.20	1860.03
MAX				516831.30	15645.17	2050.00
MIN				.00	1.20	1860.03
AVE				7674.98	289.47	1864.08

*** NORMAL END OF HEC-1 ***

APPENDIX III

**DAM BREAK DOWNSTREAM FLOOD
HYDROGRAPH ANALYSIS
(STAGE 9)**

ANALYSIS OF THE DOWNSTREAM FLOOD HYDROGRAPH

PRODUCED BY THE DAM BREAK OF

BRUSHY FORK DAM

ON

BRUSHY FORK

ANALYSIS BY

GEO/ENVIRONMENTAL ASSOCIATES, INC. - SAB
BRUSHY FORK - SUNNY DAY BREACH
GA FILE NO. 96-591 (BFSUNDB.IN)

BASED ON PROCEDURE DEVELOPED BY
DANNY L. FREAD, PH.D., SR. RESEARCH HYDROLOGIST

QUALITY CONTROL TESTING AND OTHER SUPPORT BY
JANICE M. LEWIS, RESEARCH HYDROLOGIST

HYDROLOGIC RESEARCH LABORATORY
W23, OFFICE OF HYDROLOGY
NOAA, NATIONAL WEATHER SERVICE
SILVER SPRING, MARYLAND 20910

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*****
*****
***          ***
*** SUMMARY OF INPUT DATA ***
***          ***
*****
*****

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INPUT CONTROL PARAMETERS FOR BRUSHY FORK DAM

PARAMETER	VARIABLE	VALUE
NUMBER OF DYNAMIC ROUTING REACHES	KON	9
TYPE OF RESERVOIR ROUTING	KUJ	0
MULTIPLE DAM INDICATOR	MULDAM	0
PRINTING INSTRUCTIONS FOR INPUT SUMMARY	KDMP	5
NO. OF RESERVOIR INFLOW HYDROGRAPH POINTS	ITEH	32
INTERVAL OF CROSS-SECTION INFO PRINTED OUT WHEN JNK=9	NPRT	0
FLOOD-PLAIN MODEL PARAMETER	KFLP	0
METRIC INPUT/OUTPUT OPTION	METRIC	0

ICPUT= 1 0 0 0 1 1 1 1 0 1 0 1 5

DHF(INTERVAL BETWEEN INPUT HYDROGRAPH ORDINATES) = .00 HRS.
 TEH(TIME AT WHICH COMPUTATIONS TERMINATE)= 15.0000 HRS.
 BREX(BREACH EXPONENT) = 1.000
 MLD(MLD FLOW OPTION) = 0
 IWF(TYPE OF WAVE FRONT TRACKING) = 0
 KPRES(WETTED PERIMETER OPTION) = 0
 KSL(LANDSLIDE PARAMETER) = 0
 DFR(WINDOW FOR CRITICAL FROUDE NO. IN MIX FLOW ALGORITHM)= .050

INFLOW HYDROGRAPH TO BRUSHY FORK DAM

```

*****
1000.00 30373.00 153640.00 339476.00 495481.00 528867.00 428287.00 152186.00
69329.00 36991.00 21947.00 14044.00 9503.00 6717.00 4917.00 3705.00
2860.00 2253.00 1805.00 1469.00 1211.00 1009.00 851.00 723.00
620.00 536.00 466.00 407.00 359.00 317.00 282.00 282.00

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TIME OF INFLOW HYDROGRAPH ORDINATES

```

.0000 .0830 .1670 .2500 .3330 .4160 .5000 .5830
.6660 .7500 .8330 .9160 1.0000 1.0830 1.1660 1.2500
1.3330 1.4160 1.5000 1.5830 1.6660 1.7500 1.8330 1.9160
2.0000 2.0830 2.1660 2.2500 2.3330 2.4160 2.5000 6.0000

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CROSS-SECTIONAL PARAMETERS FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

PARAMETER	VARIABLE	VALUE
NUMBER OF CROSS-SECTIONS	NS	22
MAXIMUM NUMBER OF TOP WIDTHS	NCS	4
NUMBER OF CROSS-SECTIONAL HYDROGRAPHS TO PLOT	NTT	1
TYPE OF OUTPUT OTHER THAN HYDROGRAPH PLOTS	JNK	4
CROSS-SECTIONAL SMOOTHING PARAMETER	KSA	0
DOWNSTREAM SUPERCRITICAL OR NOT	KSUPC	3
NO. OF LATERAL INFLOW HYDROGRAPHS	LQ	2
NO. OF POINTS IN GATE CONTROL CURVE	KCG	0

NUMBER OF CROSS-SECTION WHERE HYDROGRAPH DESIRED
(MAX NUMBER OF HYDROGRAPHS = 6)

113

CROSS-SECTIONAL VARIABLES FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

PARAMETER	UNITS	VARIABLE
LOCATION OF CROSS-SECTION	MILE	XS(I)
ELEVATION(MSL) OF FLOODING AT CROSS-SECTION	FEET	FSTG(I)
ELEV CORRESPONDING TO EACH TOP WIDTH	FEET	HS(K,I)
TOP WIDTH CORRESPONDING TO EACH ELEV (ACTIVE FLOW PORTION)	FEET	BS(K,I)
TOP WIDTH CORRESPONDING TO EACH ELEV (OFF-CHANNEL PORTION)	FEET	BSS(K,I)
NUMBER OF CROSS-SECTION	I	
NUMBER OF ELEVATION LEVEL	K	

CROSS-SECTION NUMBER 1

XS(1) = .000 FSTG(1) = .00

HS ...	1313.0	1320.0	1340.0	1400.0
BS ...	5.0	40.0	100.0	350.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 2

XS(1) = .152 FSTG(1) = .00

HS ...	1256.0	1260.0	1300.0	1400.0
BS ...	5.0	40.0	160.0	450.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 3

XS(1) = .739 FSTG(1) = .00

HS ...	1175.0	1180.0	1200.0	1400.0
BS ...	5.0	70.0	190.0	1100.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 4

XS(1) = 2.727 FSTG(1) = .00

HS ...	930.0	940.0	960.0	1200.0
BS ...	10.0	100.0	300.0	800.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 5

XS(1) = 3.030 FSTG(1) = .00

HS ...	890.0	900.0	920.0	980.0
BS ...	10.0	100.0	400.0	1000.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 6

XS(1) = 3.636 FSTG(1) = .00

HS ...	847.0	860.0	880.0	920.0
BS ...	15.0	100.0	380.0	550.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 7

XS(1) = 3.883 FSTG(1) = .00

HS ...	843.0	860.0	880.0	920.0
BS ...	100.0	250.0	550.0	750.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 8

XS(1) = 4.621 FSTG(1) = .00

HS ...	829.0	840.0	880.0	920.0
BS ...	100.0	400.0	600.0	700.0

BSS 0 .0 .0 .0
 CROSS-SECTION NUMBER 9

XS(1) = 5.208 FSTG(1) = .00

HS ...	824.0	840.0	880.0	920.0
BS ...	50.0	550.0	900.0	1000.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 10

XS(1) = 6.913 FSTG(1) = .00

HS ...	785.0	800.0	840.0	880.0
BS ...	150.0	300.0	800.0	900.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 11

XS(1) = 8.049 FSTG(1) = .00

HS ...	772.0	800.0	840.0	880.0
BS ...	150.0	950.0	1000.0	1200.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 12

XS(1) = 10.284 FSTG(1) = .00

HS ...	747.0	760.0	800.0	840.0
BS ...	100.0	900.0	1000.0	1200.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 13

XS(1) = 13.352 FSTG(1) = .00

HS ...	720.0	740.0	760.0	800.0
BS ...	100.0	540.0	900.0	1000.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 14

XS(1) = 14.602 FSTG(1) = .00

HS ...	713.0	720.0	760.0	800.0
BS ...	100.0	180.0	820.0	1050.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 15

XS(1) = 16.866 FSTG(1) = .00

HS ...	696.0	720.0	760.0	800.0
BS ...	150.0	540.0	780.0	1000.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 16

XS(1) = 18.277 FSTG(1) = .00

HS ...	684.0	705.0	720.0	760.0
BS ...	100.0	460.0	650.0	1100.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 17

XS(1) = 19.261 FSTG(1) = .00

HS ...	673.0	680.0	720.0	760.0
BS ...	100.0	200.0	800.0	1050.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 18

XS(1) = 20.810 FSTG(1) = .00

HS ...	666.5	680.0	720.0	760.0
BS ...	150.0	200.0	480.0	850.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 19

XS(1) = 23.272 FSTG(1) = .00

HS ...	657.0	680.0	720.0	800.0
BS ...	150.0	200.0	750.0	1500.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 20

XS(1) = 26.037 FSTG(1) = .00

HS ...	646.0	660.0	680.0	800.0
BS ...	50.0	200.0	300.0	1000.0

1
BSS 0 .0 .0 .0

CROSS-SECTION NUMBER 21

XS(I) = 29.446 FSTG(I) = .00

HS ...	633.0	655.0	680.0	800.0
BS ...	150.0	200.0	480.0	850.0
BSS ...	.0	.0	.0	.0

CROSS-SECTION NUMBER 22

XS(I) = 32.590 FSTG(I) = .00

HS ...	620.0	640.0	680.0	800.0
BS ...	75.0	100.0	550.0	1250.0
BSS ...	.0	.0	.0	.0

1
MANNING N ROUGHNESS COEFFICIENTS FOR THE GIVEN REACHES
(CM(K,I),K=1,NCS) WHERE I = REACH NUMBER

REACH 1 ...	.060	.060	.080	.100
REACH 2 ...	.060	.060	.080	.100
REACH 3 ...	.060	.060	.080	.100
REACH 4 ...	.060	.060	.080	.100
REACH 5 ...	.060	.060	.080	.100
REACH 6 ...	.060	.060	.080	.100
REACH 7 ...	.060	.060	.080	.100
REACH 8 ...	.060	.060	.080	.100
REACH 9 ...	.060	.060	.080	.100
REACH 10 ...	.060	.060	.080	.100
REACH 11 ...	.060	.060	.080	.100
REACH 12 ...	.060	.060	.080	.100
REACH 13 ...	.060	.060	.080	.100
REACH 14 ...	.060	.060	.080	.100
REACH 15 ...	.060	.060	.080	.100
REACH 16 ...	.060	.060	.080	.100
REACH 17 ...	.060	.060	.080	.100
REACH 18 ...	.060	.060	.080	.100
REACH 19 ...	.060	.060	.080	.100
REACH 20 ...	.060	.060	.080	.100
REACH 21 ...	.060	.060	.080	.100

CROSS-SECTIONAL VARIABLES FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

PARAMETER *****	UNITS *****	VARIABLE *****
MINIMUM COMPUTATIONAL DISTANCE USED BETWEEN CROSS-SECTIONS	MILE	DXM(I)
CONTRACTION - EXPANSION COEFFICIENTS BETWEEN CROSS-SECTIONS		FKC(I)

REACH NUMBER *****	DXM(I) *****	FKC(I) *****
1	.000	.000
2	.000	.000
3	.000	.000
4	.000	.000
5	.000	.000
6	.000	.000
7	.000	.000
8	.000	.000
9	.000	.000
10	.000	.000
11	.000	.000
12	.000	.000
13	.000	.000
14	.000	.000
15	.000	.000
16	.000	.000
17	.000	.000
18	.000	.000
19	.000	.000
20	.000	.000
21	.000	.000

DOWNSTREAM FLOW PARAMETERS FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

PARAMETER	UNITS	VARIABLE	VALUE
*****	*****	*****	*****
MAX DISCHARGE AT DOWNSTREAM EXTREMITY	CFS	QMAXD	.0
MAX LATERAL OUTFLOW PRODUCING LOSSES	CFS /FEET QLL		.000
INITIAL SIZE OF TIME STEP	HOUR	DTHM	.0000
DOWNSTREAM BOUNDARY PARAMETER	FEET	YDN	.000000
SLOPE OF CHANNEL DOWNSTREAM OF DAM	FPM	SCM	181.00
THETA WEIGHTING FACTOR		THETA	.00
CONVERGENCE CRITERION FOR STAGE	FEET	EPSY	1.000000
TIME AT WHICH DAM STARTS TO FAIL	HOUR	TFI	.00

AT REACH= 1 DXM WAS CHANGED TO .038 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 2 DXM WAS CHANGED TO .098 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 3 DXM WAS CHANGED TO .497 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 4 DXM WAS CHANGED TO .076 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 5 DXM WAS CHANGED TO .303 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 6 DXM WAS CHANGED TO .041 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 7 DXM WAS CHANGED TO .246 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 8 DXM WAS CHANGED TO .294 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 10 DXM WAS CHANGED TO .142 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 11 DXM WAS CHANGED TO .745 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 12 DXM WAS CHANGED TO 1.023 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 13 DXM WAS CHANGED TO .104 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 14 DXM WAS CHANGED TO .151 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 15 DXM WAS CHANGED TO .470 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 16 DXM WAS CHANGED TO .098 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 17 DXM WAS CHANGED TO .516 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 18 DXM WAS CHANGED TO .615 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 19 DXM WAS CHANGED TO .553 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 20 DXM WAS CHANGED TO 1.136 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 21 DXM WAS CHANGED TO 1.048 DUE TO EXP/CONTRACT CRITERIA

AT REACH= 9 DXM WAS CHANGED TO .548 DUE TO (WAVE SPEED * DT) CRITERIA

AT REACH= 11 DXM WAS CHANGED TO .468 DUE TO (WAVE SPEED * DT) CRITERIA

AT REACH= 12 DXM WAS CHANGED TO .362 DUE TO (WAVE SPEED * DT) CRITERIA

AT REACH= 15 DXM WAS CHANGED TO .281 DUE TO (WAVE SPEED * DT) CRITERIA

AT REACH= 17 DXM WAS CHANGED TO .335 DUE TO (WAVE SPEED * DT) CRITERIA

AT REACH= 18 DXM WAS CHANGED TO .347 DUE TO (WAVE SPEED * DT) CRITERIA
 AT REACH= 19 DXM WAS CHANGED TO .254 DUE TO (WAVE SPEED * DT) CRITERIA
 AT REACH= 20 DXM WAS CHANGED TO .278 DUE TO (WAVE SPEED * DT) CRITERIA
 AT REACH= 21 DXM WAS CHANGED TO .297 DUE TO (WAVE SPEED * DT) CRITERIA

COMPUTATIONS WILL USE THE FOLLOWING DXM VALUES

.038	.098	.497	.076	.303	.041	.246	.294	.548	.142	.468	.352	.104	.151	.281
.098	.335	.347	.254	.278	.297									

LATERAL INFLOW REACH NUMBER

LQX(1)

8 12

(QL(L, 1), L=1, ITEH)							
400.	400.	400.	400.	400.	400.	400.	400.
400.	400.	400.	400.	400.	400.	400.	400.
400.	400.	400.	400.	400.	400.	400.	400.
400.	400.	400.	400.	400.	400.	400.	400.

(QL(L, 2), L=1, ITEH)							
100.	100.	100.	100.	100.	100.	100.	100.
100.	100.	100.	100.	100.	100.	100.	100.
100.	100.	100.	100.	100.	100.	100.	100.
100.	100.	100.	100.	100.	100.	100.	100.

TOTAL NUMBER OF CROSS SECTIONS (ORIGINAL+INTERPOLATED) (N) = 140 (MAXIMUM ALLOWABLE = 200)

 *** SUMMARY OF OUTPUT DATA ***

CROSS-SECTION NO.	MILE	BOTTOM ELEVATION FEET	REACH NO.	REACH LENGTH MILE	SLOPE FPM	MESSAGE
1	.00	1313.00	1	.15	375.00	
2	.15	1256.00	2	.59	137.99	
3	.74	1175.00	3	1.99	123.24	
4	2.73	930.00	4	.30	132.01	
5	3.03	890.00	5	.61	70.96	
6	3.64	847.00	6	.25	16.19	
7	3.88	843.00	7	.74	18.97	
8	4.62	829.00	8	.59	8.52	
9	5.21	824.00	9	1.70	22.87	
10	6.91	785.00	10	1.14	11.44	
11	8.05	772.00	11	2.24	11.19	
12	10.28	747.00	12	3.07	8.80	
13	13.35	720.00	13	1.25	5.60	
14	14.60	713.00	14	2.26	7.51	
15	16.87	696.00	15	1.41	8.50	
16	18.28	684.00	16	.98	11.18	
17	19.26	673.00	17	1.55	4.20	
18	20.81	666.50	18	2.46	3.86	
19	23.27	657.00	19	2.77	3.98	
20	26.04	646.00	20	3.41	3.81	
21	29.45	633.00	21	3.14	4.13	
22	32.59	620.00				

INITIAL CONDITIONS

I=	1	X=	.000	YN=	1317.65	DEPN=	4.65	YC=	1318.40	DEPC=	5.40	IFR=	1	ITN=	14	ITC=	14
I=	2	X=	.038	YN=	1303.26	DEPN=	4.51	YC=	1303.96	DEPC=	5.21	IFR=	1	ITN=	14	ITC=	14
I=	3	X=	.076	YN=	1288.85	DEPN=	4.35	YC=	1289.50	DEPC=	5.00	IFR=	1	ITN=	14	ITC=	14
I=	4	X=	.114	YN=	1274.42	DEPN=	4.17	YC=	1275.01	DEPC=	4.76	IFR=	1	ITN=	15	ITC=	14
I=	5	X=	.152	YN=	1260.81	DEPN=	4.81	YC=	1260.46	DEPC=	4.46	IFR=	0	ITN=	15	ITC=	15
I=	6	X=	.250	YN=	1247.18	DEPN=	4.68	YC=	1246.85	DEPC=	4.35	IFR=	0	ITN=	15	ITC=	15
I=	7	X=	.348	YN=	1233.59	DEPN=	4.59	YC=	1233.25	DEPC=	4.25	IFR=	0	ITN=	15	ITC=	15
I=	8	X=	.446	YN=	1220.02	DEPN=	4.52	YC=	1219.65	DEPC=	4.15	IFR=	0	ITN=	15	ITC=	15
I=	9	X=	.543	YN=	1206.44	DEPN=	4.44	YC=	1206.07	DEPC=	4.07	IFR=	0	ITN=	15	ITC=	15
I=	10	X=	.641	YN=	1192.87	DEPN=	4.37	YC=	1192.50	DEPC=	4.00	IFR=	0	ITN=	15	ITC=	15
I=	11	X=	.739	YN=	1179.40	DEPN=	4.40	YC=	1178.94	DEPC=	3.94	IFR=	0	ITN=	15	ITC=	15
I=	12	X=	1.236	YN=	1118.25	DEPN=	4.50	YC=	1117.78	DEPC=	4.03	IFR=	0	ITN=	15	ITC=	15
I=	13	X=	1.733	YN=	1057.04	DEPN=	4.54	YC=	1056.55	DEPC=	4.05	IFR=	0	ITN=	15	ITC=	15
I=	14	X=	2.230	YN=	995.78	DEPN=	4.53	YC=	995.30	DEPC=	4.05	IFR=	0	ITN=	15	ITC=	15
I=	15	X=	2.727	YN=	934.43	DEPN=	4.43	YC=	934.01	DEPC=	4.01	IFR=	0	ITN=	16	ITC=	16
I=	16	X=	2.803	YN=	924.43	DEPN=	4.43	YC=	924.01	DEPC=	4.01	IFR=	0	ITN=	15	ITC=	15
I=	17	X=	2.878	YN=	914.43	DEPN=	4.43	YC=	914.02	DEPC=	4.02	IFR=	0	ITN=	15	ITC=	15
I=	18	X=	2.954	YN=	904.43	DEPN=	4.43	YC=	904.01	DEPC=	4.01	IFR=	0	ITN=	15	ITC=	15
I=	19	X=	3.030	YN=	895.08	DEPN=	5.08	YC=	894.02	DEPC=	4.02	IFR=	0	ITN=	14	ITC=	14
I=	20	X=	3.333	YN=	873.58	DEPN=	5.08	YC=	872.48	DEPC=	3.98	IFR=	0	ITN=	14	ITC=	14
I=	21	X=	3.636	YN=	854.09	DEPN=	7.09	YC=	850.89	DEPC=	3.89	IFR=	0	ITN=	14	ITC=	14
I=	22	X=	3.677	YN=	852.10	DEPN=	5.76	YC=	849.26	DEPC=	2.93	IFR=	0	ITN=	14	ITC=	14
I=	23	X=	3.718	YN=	850.55	DEPN=	4.88	YC=	848.04	DEPC=	2.37	IFR=	0	ITN=	14	ITC=	14
I=	24	X=	3.760	YN=	849.26	DEPN=	4.26	YC=	847.01	DEPC=	2.01	IFR=	0	ITN=	14	ITC=	14
I=	25	X=	3.801	YN=	848.15	DEPN=	3.81	YC=	846.10	DEPC=	1.76	IFR=	0	ITN=	14	ITC=	14
I=	26	X=	3.842	YN=	847.13	DEPN=	3.46	YC=	845.24	DEPC=	1.57	IFR=	0	ITN=	14	ITC=	14
I=	27	X=	3.883	YN=	846.04	DEPN=	3.04	YC=	844.43	DEPC=	1.43	IFR=	0	ITN=	14	ITC=	14
I=	28	X=	4.129	YN=	841.32	DEPN=	2.99	YC=	839.75	DEPC=	1.41	IFR=	0	ITN=	14	ITC=	14
I=	29	X=	4.375	YN=	836.59	DEPN=	2.93	YC=	835.06	DEPC=	1.39	IFR=	0	ITN=	14	ITC=	14
I=	30	X=	4.621	YN=	832.52	DEPN=	3.52	YC=	830.37	DEPC=	1.37	IFR=	0	ITN=	14	ITC=	14
I=	31	X=	4.915	YN=	831.10	DEPN=	4.60	YC=	828.43	DEPC=	1.93	IFR=	0	ITN=	14	ITC=	14
I=	32	X=	5.208	YN=	828.03	DEPN=	4.03	YC=	826.28	DEPC=	2.28	IFR=	0	ITN=	14	ITC=	14

I= 33	X= 5.776	YN= 814.54	DEPN= 3.54	YC= 812.87	DEPC= 1.87	IFR= 0	ITN= 14	ITC= 14
I= 34	X= 6.345	YN= 801.13	DEPN= 3.13	YC= 799.58	DEPC= 1.58	IFR= 0	ITN= 14	ITC= 14
I= 35	X= 6.913	YN= 788.41	DEPN= 3.41	YC= 786.37	DEPC= 1.37	IFR= 0	ITN= 14	ITC= 14
I= 36	X= 7.055	YN= 786.75	DEPN= 3.38	YC= 784.74	DEPC= 1.37	IFR= 0	ITN= 14	ITC= 14
I= 37	X= 7.197	YN= 785.09	DEPN= 3.34	YC= 783.11	DEPC= 1.36	IFR= 0	ITN= 14	ITC= 14
I= 38	X= 7.339	YN= 783.44	DEPN= 3.32	YC= 781.48	DEPC= 1.35	IFR= 0	ITN= 14	ITC= 14
I= 39	X= 7.481	YN= 781.80	DEPN= 3.30	YC= 779.85	DEPC= 1.35	IFR= 0	ITN= 14	ITC= 14
I= 40	X= 7.623	YN= 780.16	DEPN= 3.28	YC= 778.22	DEPC= 1.34	IFR= 0	ITN= 14	ITC= 14
I= 41	X= 7.765	YN= 778.52	DEPN= 3.27	YC= 776.59	DEPC= 1.34	IFR= 0	ITN= 14	ITC= 14
I= 42	X= 7.907	YN= 776.88	DEPN= 3.26	YC= 774.96	DEPC= 1.33	IFR= 0	ITN= 14	ITC= 14
I= 43	X= 8.049	YN= 775.27	DEPN= 3.27	YC= 773.33	DEPC= 1.33	IFR= 0	ITN= 14	ITC= 14
I= 44	X= 8.608	YN= 769.11	DEPN= 3.36	YC= 767.14	DEPC= 1.39	IFR= 0	ITN= 14	ITC= 14
I= 45	X= 9.167	YN= 762.93	DEPN= 3.43	YC= 760.95	DEPC= 1.45	IFR= 0	ITN= 14	ITC= 14
I= 46	X= 9.725	YN= 756.71	DEPN= 3.46	YC= 754.76	DEPC= 1.51	IFR= 0	ITN= 14	ITC= 14
I= 47	X= 10.284	YN= 750.65	DEPN= 3.65	YC= 748.55	DEPC= 1.55	IFR= 0	ITN= 14	ITC= 14
I= 48	X= 10.668	YN= 747.49	DEPN= 3.86	YC= 745.26	DEPC= 1.64	IFR= 0	ITN= 14	ITC= 14
I= 49	X= 11.051	YN= 744.20	DEPN= 3.95	YC= 741.91	DEPC= 1.66	IFR= 0	ITN= 14	ITC= 14
I= 50	X= 11.435	YN= 740.92	DEPN= 4.04	YC= 738.56	DEPC= 1.69	IFR= 0	ITN= 14	ITC= 14
I= 51	X= 11.818	YN= 737.63	DEPN= 4.13	YC= 735.21	DEPC= 1.71	IFR= 0	ITN= 14	ITC= 14
I= 52	X= 12.202	YN= 734.33	DEPN= 4.21	YC= 731.85	DEPC= 1.73	IFR= 0	ITN= 14	ITC= 14
I= 53	X= 12.585	YN= 731.04	DEPN= 4.29	YC= 728.50	DEPC= 1.75	IFR= 0	ITN= 14	ITC= 14
I= 54	X= 12.969	YN= 727.74	DEPN= 4.37	YC= 725.14	DEPC= 1.77	IFR= 0	ITN= 14	ITC= 14
I= 55	X= 13.352	YN= 725.01	DEPN= 5.01	YC= 721.78	DEPC= 1.78	IFR= 0	ITN= 14	ITC= 14
I= 56	X= 13.456	YN= 724.43	DEPN= 5.01	YC= 721.20	DEPC= 1.79	IFR= 0	ITN= 14	ITC= 14
I= 57	X= 13.560	YN= 723.86	DEPN= 5.03	YC= 720.62	DEPC= 1.79	IFR= 0	ITN= 14	ITC= 14
I= 58	X= 13.665	YN= 723.29	DEPN= 5.04	YC= 720.04	DEPC= 1.79	IFR= 0	ITN= 14	ITC= 14
I= 59	X= 13.769	YN= 722.72	DEPN= 5.05	YC= 719.46	DEPC= 1.79	IFR= 0	ITN= 14	ITC= 14
I= 60	X= 13.873	YN= 722.15	DEPN= 5.07	YC= 718.88	DEPC= 1.79	IFR= 0	ITN= 14	ITC= 14
I= 61	X= 13.977	YN= 721.59	DEPN= 5.09	YC= 718.30	DEPC= 1.80	IFR= 0	ITN= 14	ITC= 14
I= 62	X= 14.081	YN= 721.03	DEPN= 5.11	YC= 717.72	DEPC= 1.80	IFR= 0	ITN= 14	ITC= 14
I= 63	X= 14.185	YN= 720.47	DEPN= 5.14	YC= 717.14	DEPC= 1.81	IFR= 0	ITN= 14	ITC= 14
I= 64	X= 14.290	YN= 719.92	DEPN= 5.17	YC= 716.56	DEPC= 1.81	IFR= 0	ITN= 14	ITC= 14
I= 65	X= 14.394	YN= 719.38	DEPN= 5.22	YC= 715.99	DEPC= 1.82	IFR= 0	ITN= 14	ITC= 14
I= 66	X= 14.498	YN= 718.86	DEPN= 5.27	YC= 715.42	DEPC= 1.83	IFR= 0	ITN= 14	ITC= 14
I= 67	X= 14.602	YN= 717.93	DEPN= 4.93	YC= 714.85	DEPC= 1.85	IFR= 0	ITN= 14	ITC= 14
I= 68	X= 14.753	YN= 716.69	DEPN= 4.82	YC= 713.67	DEPC= 1.80	IFR= 0	ITN= 14	ITC= 14
I= 69	X= 14.904	YN= 715.46	DEPN= 4.73	YC= 712.50	DEPC= 1.76	IFR= 0	ITN= 14	ITC= 14
I= 70	X= 15.055	YN= 714.24	DEPN= 4.64	YC= 711.33	DEPC= 1.73	IFR= 0	ITN= 14	ITC= 14
I= 71	X= 15.206	YN= 713.03	DEPN= 4.57	YC= 710.16	DEPC= 1.70	IFR= 0	ITN= 14	ITC= 14
I= 72	X= 15.357	YN= 711.83	DEPN= 4.49	YC= 709.00	DEPC= 1.67	IFR= 0	ITN= 14	ITC= 14
I= 73	X= 15.508	YN= 710.63	DEPN= 4.43	YC= 707.83	DEPC= 1.63	IFR= 0	ITN= 14	ITC= 14
I= 74	X= 15.659	YN= 709.43	DEPN= 4.36	YC= 706.67	DEPC= 1.61	IFR= 0	ITN= 14	ITC= 14
I= 75	X= 15.809	YN= 708.23	DEPN= 4.30	YC= 705.51	DEPC= 1.58	IFR= 0	ITN= 14	ITC= 14
I= 76	X= 15.960	YN= 707.04	DEPN= 4.24	YC= 704.36	DEPC= 1.56	IFR= 0	ITN= 14	ITC= 14
I= 77	X= 16.111	YN= 705.85	DEPN= 4.19	YC= 703.19	DEPC= 1.53	IFR= 0	ITN= 14	ITC= 14
I= 78	X= 16.262	YN= 704.66	DEPN= 4.13	YC= 702.04	DEPC= 1.51	IFR= 0	ITN= 14	ITC= 14
I= 79	X= 16.413	YN= 703.48	DEPN= 4.08	YC= 700.88	DEPC= 1.48	IFR= 0	ITN= 14	ITC= 14
I= 80	X= 16.564	YN= 702.30	DEPN= 4.03	YC= 699.73	DEPC= 1.46	IFR= 0	ITN= 14	ITC= 14
I= 81	X= 16.715	YN= 701.12	DEPN= 3.98	YC= 698.57	DEPC= 1.44	IFR= 0	ITN= 14	ITC= 14
I= 82	X= 16.866	YN= 699.80	DEPN= 3.80	YC= 697.42	DEPC= 1.42	IFR= 0	ITN= 14	ITC= 14
I= 83	X= 17.148	YN= 697.53	DEPN= 3.93	YC= 695.08	DEPC= 1.48	IFR= 0	ITN= 14	ITC= 14
I= 84	X= 17.430	YN= 695.28	DEPN= 4.08	YC= 692.75	DEPC= 1.55	IFR= 0	ITN= 14	ITC= 14
I= 85	X= 17.713	YN= 693.04	DEPN= 4.24	YC= 690.43	DEPC= 1.63	IFR= 0	ITN= 14	ITC= 14
I= 86	X= 17.995	YN= 690.82	DEPN= 4.42	YC= 688.12	DEPC= 1.72	IFR= 0	ITN= 14	ITC= 14
I= 87	X= 18.277	YN= 688.27	DEPN= 4.27	YC= 685.81	DEPC= 1.81	IFR= 0	ITN= 14	ITC= 14
I= 88	X= 18.375	YN= 687.18	DEPN= 4.28	YC= 684.71	DEPC= 1.81	IFR= 0	ITN= 14	ITC= 14
I= 89	X= 18.474	YN= 686.08	DEPN= 4.28	YC= 683.61	DEPC= 1.81	IFR= 0	ITN= 14	ITC= 14
I= 90	X= 18.572	YN= 684.98	DEPN= 4.28	YC= 682.51	DEPC= 1.81	IFR= 0	ITN= 14	ITC= 14
I= 91	X= 18.671	YN= 683.89	DEPN= 4.29	YC= 681.41	DEPC= 1.81	IFR= 0	ITN= 14	ITC= 14
I= 92	X= 18.769	YN= 682.79	DEPN= 4.29	YC= 680.31	DEPC= 1.81	IFR= 0	ITN= 14	ITC= 14
I= 93	X= 18.867	YN= 681.70	DEPN= 4.30	YC= 679.22	DEPC= 1.82	IFR= 0	ITN= 14	ITC= 14
I= 94	X= 18.966	YN= 680.60	DEPN= 4.30	YC= 678.12	DEPC= 1.82	IFR= 0	ITN= 14	ITC= 14
I= 95	X= 19.064	YN= 679.51	DEPN= 4.31	YC= 677.02	DEPC= 1.82	IFR= 0	ITN= 14	ITC= 14
I= 96	X= 19.163	YN= 678.42	DEPN= 4.32	YC= 675.92	DEPC= 1.82	IFR= 0	ITN= 14	ITC= 14
I= 97	X= 19.261	YN= 678.67	DEPN= 5.67	YC= 674.83	DEPC= 1.83	IFR= 0	ITN= 14	ITC= 14
I= 98	X= 19.648	YN= 676.89	DEPN= 5.51	YC= 673.10	DEPC= 1.72	IFR= 0	ITN= 14	ITC= 14
I= 99	X= 20.035	YN= 675.06	DEPN= 5.31	YC= 671.37	DEPC= 1.62	IFR= 0	ITN= 14	ITC= 14
I= 100	X= 20.423	YN= 673.21	DEPN= 5.08	YC= 669.66	DEPC= 1.53	IFR= 0	ITN= 14	ITC= 14
I= 101	X= 20.810	YN= 671.49	DEPN= 4.99	YC= 667.95	DEPC= 1.45	IFR= 0	ITN= 14	ITC= 14
I= 102	X= 21.162	YN= 670.14	DEPN= 4.99	YC= 666.59	DEPC= 1.45	IFR= 0	ITN= 14	ITC= 14
I= 103	X= 21.513	YN= 668.79	DEPN= 5.00	YC= 665.23	DEPC= 1.45	IFR= 0	ITN= 14	ITC= 14
I= 104	X= 21.865	YN= 667.43	DEPN= 5.00	YC= 663.88	DEPC= 1.45	IFR= 0	ITN= 14	ITC= 14
I= 105	X= 22.217	YN= 666.08	DEPN= 5.01	YC= 662.52	DEPC= 1.45	IFR= 0	ITN= 14	ITC= 14
I= 106	X= 22.569	YN= 664.73	DEPN= 5.01	YC= 661.17	DEPC= 1.45	IFR= 0	ITN= 14	ITC= 14
I= 107	X= 22.920	YN= 663.37	DEPN= 5.02	YC= 659.81	DEPC= 1.45	IFR= 0	ITN= 15	ITC= 15
I= 108	X= 23.272	YN= 661.97	DEPN= 4.97	YC= 658.46	DEPC= 1.46	IFR= 0	ITN= 15	ITC= 15
I= 109	X= 23.549	YN= 661.07	DEPN= 5.17	YC= 657.42	DEPC= 1.52	IFR= 0	ITN= 15	ITC= 15
I= 110	X= 23.825	YN= 660.18	DEPN= 5.38	YC= 656.39	DEPC= 1.59	IFR= 0	ITN= 15	ITC= 15
I= 111	X= 24.102	YN= 659.31	DEPN= 5.61	YC= 655.38	DEPC= 1.68	IFR= 0	ITN= 15	ITC= 15
I= 112	X= 24.378	YN= 658.47	DEPN= 5.87	YC= 654.37	DEPC= 1.77	IFR= 0	ITN= 15	ITC= 15
I= 113	X= 24.655	YN= 657.65	DEPN= 6.15	YC= 653.38	DEPC= 1.88	IFR= 0	ITN= 15	ITC= 15
I= 114	X= 24.931	YN= 656.85	DEPN= 6.45	YC= 652.40	DEPC= 2.00	IFR= 0	ITN= 15	ITC= 15
I= 115	X= 25.208	YN= 656.07	DEPN= 6.77	YC= 651.45	DEPC= 2.15	IFR= 0	ITN= 15	ITC= 15

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I= 100	X= 20.423	QIL= 1500.	YIL= 673.11	DEP= 4.98	ITB= 3
I= 99	X= 20.035	QIL= 1500.	YIL= 674.89	DEP= 5.14	ITB= 3
I= 98	X= 19.648	QIL= 1500.	YIL= 676.72	DEP= 5.34	ITB= 3
I= 97	X= 19.261	QIL= 1500.	YIL= 678.53	DEP= 5.53	ITB= 3
I= 96	X= 19.163	QIL= 1500.	YIL= 679.06	DEP= 4.96	ITB= 4
I= 95	X= 19.064	QIL= 1500.	YIL= 679.81	DEP= 4.61	ITB= 4
I= 94	X= 18.966	QIL= 1500.	YIL= 680.73	DEP= 4.43	ITB= 4
I= 93	X= 18.867	QIL= 1500.	YIL= 681.75	DEP= 4.35	ITB= 4
I= 92	X= 18.769	QIL= 1500.	YIL= 682.82	DEP= 4.32	ITB= 4
I= 91	X= 18.671	QIL= 1500.	YIL= 683.90	DEP= 4.30	ITB= 4
I= 90	X= 18.572	QIL= 1500.	YIL= 684.99	DEP= 4.29	ITB= 4
I= 89	X= 18.474	QIL= 1500.	YIL= 686.09	DEP= 4.29	ITB= 4
I= 88	X= 18.375	QIL= 1500.	YIL= 687.19	DEP= 4.29	ITB= 4
I= 87	X= 18.277	QIL= 1500.	YIL= 688.28	DEP= 4.28	ITB= 4
I= 86	X= 17.995	QIL= 1500.	YIL= 690.92	DEP= 4.52	ITB= 3
I= 85	X= 17.713	QIL= 1500.	YIL= 693.14	DEP= 4.34	ITB= 4
I= 84	X= 17.430	QIL= 1500.	YIL= 695.37	DEP= 4.17	ITB= 3
I= 83	X= 17.148	QIL= 1500.	YIL= 697.61	DEP= 4.01	ITB= 3
I= 82	X= 16.866	QIL= 1500.	YIL= 699.87	DEP= 3.87	ITB= 3
I= 81	X= 16.715	QIL= 1500.	YIL= 701.07	DEP= 3.93	ITB= 4
I= 80	X= 16.564	QIL= 1500.	YIL= 702.25	DEP= 3.99	ITB= 4
I= 79	X= 16.413	QIL= 1500.	YIL= 703.44	DEP= 4.04	ITB= 4
I= 78	X= 16.262	QIL= 1500.	YIL= 704.62	DEP= 4.09	ITB= 4
I= 77	X= 16.111	QIL= 1500.	YIL= 705.81	DEP= 4.14	ITB= 4
I= 76	X= 15.960	QIL= 1500.	YIL= 706.99	DEP= 4.19	ITB= 4
I= 75	X= 15.809	QIL= 1500.	YIL= 708.18	DEP= 4.25	ITB= 4
I= 74	X= 15.659	QIL= 1500.	YIL= 709.37	DEP= 4.31	ITB= 4
I= 73	X= 15.508	QIL= 1500.	YIL= 710.57	DEP= 4.37	ITB= 4
I= 72	X= 15.357	QIL= 1500.	YIL= 711.76	DEP= 4.43	ITB= 4
I= 71	X= 15.206	QIL= 1500.	YIL= 712.96	DEP= 4.50	ITB= 4
I= 70	X= 15.055	QIL= 1500.	YIL= 714.17	DEP= 4.57	ITB= 4
I= 69	X= 14.904	QIL= 1500.	YIL= 715.38	DEP= 4.65	ITB= 4
I= 68	X= 14.753	QIL= 1500.	YIL= 716.59	DEP= 4.73	ITB= 4
I= 67	X= 14.602	QIL= 1500.	YIL= 717.82	DEP= 4.82	ITB= 4
I= 66	X= 14.498	QIL= 1500.	YIL= 718.61	DEP= 5.02	ITB= 4
I= 65	X= 14.394	QIL= 1500.	YIL= 719.28	DEP= 5.11	ITB= 4
I= 64	X= 14.290	QIL= 1500.	YIL= 719.90	DEP= 5.15	ITB= 4
I= 63	X= 14.185	QIL= 1500.	YIL= 720.49	DEP= 5.15	ITB= 4
I= 62	X= 14.081	QIL= 1500.	YIL= 721.06	DEP= 5.15	ITB= 4
I= 61	X= 13.977	QIL= 1500.	YIL= 721.63	DEP= 5.13	ITB= 4
I= 60	X= 13.873	QIL= 1500.	YIL= 722.20	DEP= 5.12	ITB= 4
I= 59	X= 13.769	QIL= 1500.	YIL= 722.77	DEP= 5.10	ITB= 4
I= 58	X= 13.665	QIL= 1500.	YIL= 723.33	DEP= 5.08	ITB= 4
I= 57	X= 13.560	QIL= 1500.	YIL= 723.90	DEP= 5.07	ITB= 4
I= 56	X= 13.456	QIL= 1500.	YIL= 724.47	DEP= 5.05	ITB= 4
I= 55	X= 13.352	QIL= 1500.	YIL= 725.04	DEP= 5.04	ITB= 4
I= 54	X= 12.969	QIL= 1500.	YIL= 727.71	DEP= 4.33	ITB= 3
I= 53	X= 12.585	QIL= 1500.	YIL= 731.09	DEP= 4.34	ITB= 3
I= 52	X= 12.202	QIL= 1500.	YIL= 734.36	DEP= 4.24	ITB= 3
I= 51	X= 11.818	QIL= 1500.	YIL= 737.66	DEP= 4.16	ITB= 3
I= 50	X= 11.435	QIL= 1500.	YIL= 740.95	DEP= 4.07	ITB= 3
I= 49	X= 11.051	QIL= 1500.	YIL= 744.24	DEP= 3.99	ITB= 3
I= 48	X= 10.668	QIL= 1500.	YIL= 747.52	DEP= 3.89	ITB= 3
I= 47	X= 10.284	QIL= 1400.	YIL= 750.73	DEP= 3.73	ITB= 3
I= 46	X= 9.725	QIL= 1400.	YIL= 756.53	DEP= 3.28	ITB= 3
I= 45	X= 9.167	QIL= 1400.	YIL= 763.06	DEP= 3.56	ITB= 2
I= 44	X= 8.608	QIL= 1400.	YIL= 769.05	DEP= 3.30	ITB= 3
I= 43	X= 8.049	QIL= 1400.	YIL= 775.32	DEP= 3.32	ITB= 3
I= 42	X= 7.907	QIL= 1400.	YIL= 776.88	DEP= 3.25	ITB= 4
I= 41	X= 7.765	QIL= 1400.	YIL= 778.51	DEP= 3.26	ITB= 4
I= 40	X= 7.623	QIL= 1400.	YIL= 780.15	DEP= 3.28	ITB= 4
I= 39	X= 7.481	QIL= 1400.	YIL= 781.79	DEP= 3.29	ITB= 4
I= 38	X= 7.339	QIL= 1400.	YIL= 783.44	DEP= 3.31	ITB= 3
I= 37	X= 7.197	QIL= 1400.	YIL= 785.09	DEP= 3.34	ITB= 3
I= 36	X= 7.055	QIL= 1400.	YIL= 786.74	DEP= 3.36	ITB= 3
I= 35	X= 6.913	QIL= 1400.	YIL= 788.39	DEP= 3.39	ITB= 3
I= 34	X= 6.345	QIL= 1400.	YIL= 800.54	DEP= 2.54	ITB= 3
I= 33	X= 5.776	QIL= 1400.	YIL= 814.96	DEP= 3.96	ITB= 3
I= 32	X= 5.208	QIL= 1400.	YIL= 827.61	DEP= 3.61	ITB= 3
I= 31	X= 4.915	QIL= 1400.	YIL= 831.49	DEP= 4.99	ITB= 4
I= 30	X= 4.621	QIL= 1000.	YIL= 833.14	DEP= 4.14	ITB= 4
I= 29	X= 4.375	QIL= 1000.	YIL= 835.86	DEP= 2.19	ITB= 3
I= 28	X= 4.129	QIL= 1000.	YIL= 841.73	DEP= 3.40	ITB= 3
I= 27	X= 3.883	QIL= 1000.	YIL= 845.82	DEP= 2.82	ITB= 4
I= 26	X= 3.842	QIL= 1000.	YIL= 846.80	DEP= 3.13	ITB= 4
I= 25	X= 3.801	QIL= 1000.	YIL= 847.75	DEP= 3.41	ITB= 4
I= 24	X= 3.760	QIL= 1000.	YIL= 848.74	DEP= 3.74	ITB= 4
I= 23	X= 3.718	QIL= 1000.	YIL= 849.83	DEP= 4.16	ITB= 4
I= 22	X= 3.677	QIL= 1000.	YIL= 851.07	DEP= 4.73	ITB= 4
I= 21	X= 3.636	QIL= 1000.	YIL= 852.57	DEP= 5.57	ITB= 4
I= 20	X= 3.333	QIL= 1000.	YIL= 873.07	DEP= 4.57	ITB= 3
I= 19	X= 3.030	QIL= 1000.	YIL= 895.48	DEP= 5.48	ITB= 2
I= 18	X= 2.954	QIL= 1000.	YIL= 904.03	DEP= 4.03	ITB= 15

[illegible][illegible]

KTIME= 699 ALLOWABLE KTIME= 699 TT= 14.4

PROFILE OF CRESTS AND TIMES FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

DISTANCE FROM DAM MILE *****	MAX ELEV FEET *****	MAX FLOW CFS *****	TIME MAX ELEV-HRS *****	MAX VEL FPS *****	FLOOD ELEV FEET *****	TIME FLOOD ELEV-HRS *****
.000	1388.15	527036	.411	47.05	.00	.00
.038	1376.79	526624	.411	45.69	.00	.00
.076	1361.77	526204	.411	47.63	.00	.00
.114	1345.74	525804	.411	50.02	.00	.00
.152	1329.52	525426	.411	52.15	.00	.00
.250	1322.11	524439	.411	40.69	.00	.00
.348	1306.62	523330	.422	38.64	.00	.00
.446	1289.77	522961	.422	38.18	.00	.00
.543	1273.60	522478	.422	37.26	.00	.00
.641	1257.19	521824	.422	37.97	.00	.00
.739	1241.17	521059	.354	36.15	.00	.00
1.236	1186.96	513810	.443	30.44	.00	.00
1.733	1112.10	510268	.443	38.77	.00	.00
2.230	1061.00	505949	.463	29.13	.00	.00
2.727	984.95	503119	.495	39.74	.00	.00
2.803	976.60	502460	.474	34.90	.00	.00
2.878	964.54	501794	.474	34.04	.00	.00
2.954	954.07	500956	.495	31.49	.00	.00
3.030	956.57	500956	.495	19.28	.00	.00
3.333	938.62	490838	.515	19.27	.00	.00
3.636	919.52	481407	.557	20.84	.00	.00
3.677	917.71	479675	.557	20.06	.00	.00
3.718	916.07	477708	.557	19.32	.00	.00
3.760	914.58	476211	.557	18.58	.00	.00
3.801	913.23	474648	.557	17.84	.00	.00
3.842	912.01	472888	.557	17.14	.00	.00
3.883	910.90	470936	.557	16.82	.00	.00
4.129	902.41	458551	.578	17.56	.00	.00
4.375	894.49	446289	.609	20.15	.00	.00
4.621	888.00	435564	.619	16.52	.00	.00
4.915	881.62	422164	.640	20.31	.00	.00
5.208	875.34	406091	.661	14.99	.00	.00
5.776	863.32	370295	.723	14.79	.00	.00
6.345	851.21	338593	.775	14.39	.00	.00
6.913	835.52	317896	.807	15.46	.00	.00
7.055	831.05	313568	.827	15.30	.00	.00
7.197	827.00	310168	.848	14.99	.00	.00
7.339	823.41	306418	.848	14.59	.00	.00
7.481	820.20	302682	.869	14.11	.00	.00
7.623	817.35	298554	.890	13.59	.00	.00
7.765	814.81	294682	.911	13.06	.00	.00
7.907	812.53	289745	.911	12.52	.00	.00
8.049	810.49	284862	.931	14.14	.00	.00
8.608	802.19	266048	.996	11.54	.00	.00
9.167	793.79	249136	1.059	11.16	.00	.00
9.725	785.98	232331	1.184	10.98	.00	.00
10.284	780.63	211250	1.288	9.61	.00	.00
10.668	777.59	197117	1.350	9.45	.00	.00

PROFILE OF CRESTS AND TIMES FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

DISTANCE FROM DAM MILE *****	MAX ELEV FEET *****	MAX FLOW CFS *****	TIME MAX ELEV-HRS *****	MAX VEL FPS *****	FLOOD ELEV FEET *****	TIME FLOOD ELEV-HRS *****
11.051	774.62	183781	1.412	9.32	.00	.00
11.435	771.76	171339	1.496	9.16	.00	.00
11.818	769.01	159709	1.579	9.01	.00	.00
12.202	766.46	148773	1.683	8.87	.00	.00
12.585	764.13	138011	1.787	8.81	.00	.00
12.969	761.94	127196	1.870	8.74	.00	.00
13.352	759.77	116538	1.953	8.32	.00	.00
13.456	759.15	113830	1.974	8.22	.00	.00
13.560	758.53	111346	1.995	8.12	.00	.00
13.665	757.90	109059	1.995	8.02	.00	.00
13.769	757.26	107051	2.016	7.92	.00	.00
13.873	756.60	105238	2.036	7.84	.00	.00
13.977	755.92	103674	2.057	7.74	.00	.00
14.081	755.19	102276	2.057	7.64	.00	.00
14.185	754.43	101061	2.078	7.55	.00	.00
14.290	753.60	99987	2.099	7.49	.00	.00
14.394	752.70	99024	2.120	7.52	.00	.00
14.498	751.70	98161	2.140	7.74	.00	.00
14.602	750.55	97386	2.161	8.20	.00	.00
14.753	748.86	96345	2.182	8.28	.00	.00
14.904	747.13	95405	2.224	8.33	.00	.00
15.055	745.39	94526	2.244	8.38	.00	.00
15.206	743.65	93731	2.265	8.41	.00	.00
15.357	741.91	92971	2.307	8.43	.00	.00
15.508	740.19	92271	2.328	8.43	.00	.00
15.659	738.50	91589	2.369	8.42	.00	.00
15.809	736.86	90923	2.411	8.39	.00	.00
15.960	735.27	90271	2.452	8.35	.00	.00
16.111	733.76	89605	2.494	8.30	.00	.00
16.262	732.33	88916	2.536	8.23	.00	.00
16.413	730.98	88195	2.577	8.15	.00	.00
16.564	729.72	87448	2.619	8.05	.00	.00
16.715	728.56	86655	2.640	7.93	.00	.00
16.866	727.49	85814	2.681	7.77	.00	.00
17.148	725.54	84211	2.764	7.74	.00	.00
17.430	723.61	82604	2.848	7.69	.00	.00
17.713	721.70	80996	2.931	7.63	.00	.00
17.995	719.78	79331	3.056	7.65	.00	.00
18.277	717.81	77498	3.201	7.90	.00	.00
18.375	717.15	76796	3.264	7.82	.00	.00
18.474	716.54	76055	3.326	7.73	.00	.00
18.572	715.99	75273	3.368	7.65	.00	.00
18.671	715.49	74448	3.409	7.56	.00	.00
18.769	715.04	73582	3.451	7.48	.00	.00
18.867	714.62	72677	3.492	7.39	.00	.00
18.966	714.24	71739	3.513	7.27	.00	.00
19.064	713.90	70775	3.555	7.10	.00	.00
19.163	713.58	69802	3.576	6.83	.00	.00

PROFILE OF CRESTS AND TIMES FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

DISTANCE FROM DAM MILE *****	MAX ELEV FEET *****	MAX FLOW CFS *****	TIME MAX ELEV-HRS *****	MAX VEL FPS *****	FLOOD ELEV FEET *****	TIME FLOOD ELEV-HRS *****
19.261	713.29	68819	3.596	6.47	.00	.00
19.648	712.04	65325	3.700	6.68	.00	.00
20.035	710.65	62522	3.784	6.94	.00	.00
20.423	709.11	60293	3.888	7.20	.00	.00
20.810	707.47	58474	3.992	7.29	.00	.00
21.162	706.02	56956	4.096	7.26	.00	.00
21.513	704.58	55453	4.179	7.26	.00	.00
21.865	703.15	54017	4.283	7.29	.00	.00
22.217	701.72	52677	4.387	7.32	.00	.00
22.569	700.27	51433	4.491	7.32	.00	.00
22.920	698.81	50272	4.595	7.25	.00	.00
23.272	697.31	49176	4.699	7.07	.00	.00
23.549	696.15	48337	4.782	6.97	.00	.00
23.825	694.99	47510	4.844	6.84	.00	.00
24.102	693.83	46695	4.928	6.67	.00	.00
24.378	692.67	45898	5.011	6.48	.00	.00
24.655	691.50	45144	5.073	6.26	.00	.00
24.931	690.32	44462	5.156	6.02	.00	.00
25.208	689.10	43840	5.240	5.84	.00	.00
25.484	687.84	43303	5.323	5.78	.00	.00
25.761	686.55	42816	5.427	5.76	.00	.00
26.037	685.22	42358	5.531	5.83	.00	.00
26.321	683.90	41889	5.656	5.85	.00	.00
26.605	682.61	41393	5.801	5.89	.00	.00
26.889	681.37	40846	5.926	5.94	.00	.00
27.173	680.16	40256	6.092	6.01	.00	.00
27.457	679.02	39626	6.238	6.10	.00	.00
27.742	677.96	38955	6.404	6.19	.00	.00
28.026	677.00	38248	6.571	6.28	.00	.00
28.310	676.13	37512	6.737	6.35	.00	.00
28.594	675.35	36752	6.883	6.39	.00	.00
28.878	674.66	35977	7.049	6.33	.00	.00
29.162	674.05	35197	7.195	6.15	.00	.00
29.446	673.51	34421	7.320	5.85	.00	.00
29.760	672.96	33579	7.486	5.88	.00	.00
30.075	672.44	32759	7.632	5.90	.00	.00
30.389	671.95	31957	7.798	5.92	.00	.00
30.704	671.49	31170	7.964	5.93	.00	.00
31.018	671.06	30397	8.131	5.93	.00	.00
31.332	670.65	29635	8.297	5.92	.00	.00
31.647	670.27	28884	8.464	5.91	.00	.00
31.961	669.91	28144	8.505	5.89	.00	.00
32.276	669.55	27412	8.505	5.88	.00	.00
32.590	669.19	26689	8.505	5.91	.00	.00

DISCHARGE HYDROGRAPH FOR BRUSHY FORK ... STATION NUMBER 113
 BELOW BRUSHY FORK DAM AT MILE 24.65

GAGE ZERO = 651.50 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 691.50 FEET
 FLOOD STAGE NOT AVAILABLE
 MAX STAGE = 40.00 FEET AT TIME = 5.073 HOURS
 MAX FLOW = 45145 CFS AT TIME = 4.491 HOURS

TIME HR	STAGE FEET	FLOW CFS	0	10000	20000	30000	40000	50000
.0	6.7	1500	.	.	.	.	.	.
.5	6.7	1500	.	.	.	.	.	.
1.0	6.7	1500	.	.	.	.	.	.
1.5	6.7	1500	.	.	.	.	.	.
2.0	6.7	1500	.	.	.	.	.	.
2.5	6.7	1500	.	.	.	.	.	.
3.0	12.6	8987	.	*	.	.	.	.
3.5	28.2	31292	.	.	.	*	.	.
4.0	35.6	42633	.	.	.	.	*	.
4.5	39.0	45142	.	.	.	.	*	*
5.0	40.0	43411	.	.	.	.	*	*
5.5	39.6	39672	.	.	.	.	*	.
6.0	38.5	35140	.	.	.	*	.	.
6.5	37.0	30494	.	.	.	*	.	.
7.0	35.2	26093	.	.	*	.	.	.
7.5	33.3	22103	.	.	*	.	.	.
8.0	31.3	18597	.	.	*	.	.	.
8.5	29.3	15536	.	.	*	.	.	.
9.0	27.3	12887	.	*	.	.	.	.
9.5	25.4	10621	.	*	.	.	.	.
10.0	23.5	8726	.	*	.	.	.	.
10.5	21.6	7249	.	*	.	.	.	.
11.0	19.9	6114	.	*	.	.	.	.
11.5	18.2	5233	.	*	.	.	.	.
12.0	16.6	4529	.	*	.	.	.	.
12.5	15.2	3952	.	*	.	.	.	.
13.0	13.8	3472	.	*	.	.	.	.
13.5	12.6	3069	.	*	.	.	.	.
14.0	11.4	2729	.	*	.	.	.	.

Pettus

DISCHARGE HYDROGRAPH FOR BRUSHY FORK STATION NUMBER 21
 BELOW BRUSHY FORK DAM AT MILE 3.64

GAGE ZERO = 847.00 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 919.52 FEET

FLOOD STAGE NOT AVAILABLE

MAX STAGE = 72.52 FEET AT TIME = .557 HOURS

MAX FLOW = 481408 CFS AT TIME = .515 HOURS

TIME	STAGE	FLOW						
HR	FEET	CFS	0	100000	200000	300000	400000	500000
.00	5.6	1000	*	.	.	.	.	.
.05	5.6	1001	*	.	.	.	.	.
.10	5.6	1010	*	.	.	.	.	.
.15	5.6	1026	*	.	.	.	.	.
.20	5.7	1040	*	.	.	.	.	.
.25	12.1	7474	*	.	.	.	.	.
.30	31.5	74473	.	*	.	.	.	.
.35	48.5	221049	.	.	*	.	.	.
.40	59.6	348824	.	.	.	*	.	.
.45	66.9	435018	.	.	.	.	*	.
.50	71.2	477037	.	.	.	.	.	*
.55	72.5	473539	.	.	.	.	.	*
.60	71.0	428107	.	.	.	.	*	.
.65	66.8	349934	.	.	.	*	.	.
.70	60.7	262774	.	.	*	.	.	.
.75	53.7	184533	.	.	*	.	.	.
.80	47.1	127545	.	*	.	.	.	.
.85	41.7	92126	.	*	.	.	.	.
.90	37.5	70050	.	*	.	.	.	.
.95	34.0	54347	.	*	.	.	.	.
1.00	30.4	41861	.	*	.	.	.	.
1.05	27.0	31855	.	*	.	.	.	.
1.10	24.0	24520	.	*	.	.	.	.
1.15	21.4	19382	.	*	.	.	.	.
1.20	19.2	15471	.	*	.	.	.	.
1.25	17.2	12527	*	.	.	.	.	.
1.30	15.5	10303	*	.	.	.	.	.
1.35	14.1	8576	*	.	.	.	.	.
1.40	12.9	7135	*	.	.	.	.	.
1.45	11.9	5814	*	.	.	.	.	.
1.50	11.0	4883	*	.	.	.	.	.
1.55	10.4	4193	*	.	.	.	.	.
1.60	9.8	3649	*	.	.	.	.	.
1.65	9.3	3208	*	.	.	.	.	.
1.70	8.8	2837	*	.	.	.	.	.
1.75	8.4	2525	*	.	.	.	.	.
1.80	8.0	2257	*	.	.	.	.	.
1.85	7.6	2026	*	.	.	.	.	.
1.90	7.3	1828	*	.	.	.	.	.
1.95	7.0	1656	*	.	.	.	.	.
2.00	6.7	1506	*	.	.	.	.	.
2.05	6.4	1372	*	.	.	.	.	.
2.10	6.2	1259	*	.	.	.	.	.
2.15	6.0	1177	*	.	.	.	.	.
2.20	5.9	1125	*	.	.	.	.	.
2.25	5.8	1097	*	.	.	.	.	.
2.30	5.8	1083	*	.	.	.	.	.
2.35	5.8	1076	*	.	.	.	.	.
2.40	5.7	1073	*	.	.	.	.	.
2.45	5.7	1072	*	.	.	.	.	.
2.50	5.7	1071	*	.	.	.	.	.

Whitesville

DISCHARGE HYDROGRAPH FOR BRUSHY FORK ... STATION NUMBER 32
BELOW BRUSHY FORK DAM AT MILE 5.21

GAGE ZERO = 824.00 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 875.34 FEET
FLOOD STAGE NOT AVAILABLE

MAX STAGE = 51.34 FEET AT TIME = .661 HOURS

MAX FLOW = 406092 CFS AT TIME = .619 HOURS

TIME	STAGE	FLOW					
HR	FEET	CFS	0	100000	200000	300000	400000
.0	3.6	1400	*	.	.	.	.
.1	3.6	1400	*	.	.	.	.
.2	3.6	1400	*	.	.	.	.
.3	3.6	1400	*	.	.	.	.
.4	9.6	26701	*	.	.	.	.
.5	37.5	275388	.	.	.	*	.
.6	49.2	400180	.	.	.	.	*
.7	51.0	367112	.	.	.	.	*
.8	46.4	263535	.	.	.	*	.
.9	39.5	176704	.	.	*	.	.
1.0	33.0	121531	.	.	*	.	.
1.1	27.2	84176	.	*	.	.	.
1.2	22.3	57674	.	*	.	.	.
1.3	18.5	39389	.	*	.	.	.
1.4	15.6	27126	.	*	.	.	.
1.5	13.3	19345	.	*	.	.	.
1.6	11.7	14168	*	.	.	.	.
1.7	10.2	10791	*	.	.	.	.
1.8	9.1	8378	*	.	.	.	.
1.9	8.1	6639	*	.	.	.	.
2.0	7.2	5353	*	.	.	.	.
2.1	6.5	4388	*	.	.	.	.
2.2	5.9	3654	*	.	.	.	.
2.3	5.4	3088	*	.	.	.	.
2.4	4.9	2647	*	.	.	.	.
2.5	4.6	2305	*	.	.	.	.
2.6	4.3	2048	*	.	.	.	.
2.7	4.1	1860	*	.	.	.	.
2.8	3.9	1728	*	.	.	.	.
2.9	3.8	1637	*	.	.	.	.
3.0	3.7	1577	*	.	.	.	.
3.1	3.7	1538	*	.	.	.	.
3.2	3.7	1513	*	.	.	.	.
3.3	3.7	1497	*	.	.	.	.
3.4	3.7	1487	*	.	.	.	.
3.5	3.7	1481	*	.	.	.	.
3.6	3.7	1477	*	.	.	.	.
3.7	3.7	1474	*	.	.	.	.
3.8	3.7	1473	*	.	.	.	.
3.9	3.7	1472	*	.	.	.	.
4.0	3.7	1472	*	.	.	.	.
4.1	3.7	1472	*	.	.	.	.
4.2	3.7	1471	*	.	.	.	.
4.3	3.7	1471	*	.	.	.	.
4.4	3.7	1471	*	.	.	.	.
4.5	3.7	1471	*	.	.	.	.
4.6	3.7	1471	*	.	.	.	.
4.7	3.7	1471	*	.	.	.	.
4.8	3.7	1471	*	.	.	.	.
4.9	3.7	1471	*	.	.	.	.
5.0	3.7	1471	*	.	.	.	.

Seng Creek

DISCHARGE HYDROGRAPH FOR BRUSHY FORK ... STATION NUMBER 35
 BELOW BRUSHY FORK DAM AT MILE 6.91

GAGE ZERO = 785.00 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 835.52 FEET

FLOOD STAGE NOT AVAILABLE

MAX STAGE = 50.52 FEET AT TIME = .807 HOURS

MAX FLOW = 317897 CFS AT TIME = .775 HOURS

TIME	STAGE	FLOW	0	100000	200000	300000	400000	500000
HR	FEET	CFS						
.0	3.4	1400	*	.	.	.	.	.
.1	3.4	1400	*	.	.	.	.	.
.2	3.4	1400	*	.	.	.	.	.
.3	3.4	1401	*	.	.	.	.	.
.4	3.9	2103	*	.	.	.	.	.
.5	5.6	5840	.*	.	.	.	.	.
.6	32.4	156779	.	.	*	.	.	.
.7	46.3	289993	.	.	.	*	.	.
.8	50.5	315715	.	.	.	.	*	.
.9	48.9	275882	.	.	.	*	.	.
1.0	44.9	220677	.	.	.	*	.	.
1.1	40.3	170833	.	.	*	.	.	.
1.2	35.8	129991	.	.	*	.	.	.
1.3	31.5	97571	.	*	.	.	.	.
1.4	27.6	72454	.	*	.	.	.	.
1.5	24.1	53494	.	*	.	.	.	.
1.6	21.1	39561	.	*	.	.	.	.
1.7	18.4	29501	.	*	.	.	.	.
1.8	16.1	22166	.	*	.	.	.	.
1.9	14.1	16839	.	*	.	.	.	.
2.0	12.3	13047	.	*	.	.	.	.
2.1	10.9	10307	.	*	.	.	.	.
2.2	9.7	8289	.	*	.	.	.	.
2.3	8.6	6773	.	*	.	.	.	.
2.4	7.8	5615	.	*	.	.	.	.
2.5	7.0	4717	*	.	.	.	.	.
2.6	6.4	4011	*	.	.	.	.	.
2.7	5.9	3449	*	.	.	.	.	.
2.8	5.4	2998	*	.	.	.	.	.
2.9	5.0	2636	*	.	.	.	.	.
3.0	4.7	2347	*	.	.	.	.	.
3.1	4.4	2118	*	.	.	.	.	.
3.2	4.2	1941	*	.	.	.	.	.
3.3	4.0	1806	*	.	.	.	.	.
3.4	3.8	1706	*	.	.	.	.	.
3.5	3.7	1633	*	.	.	.	.	.
3.6	3.7	1580	*	.	.	.	.	.
3.7	3.6	1544	*	.	.	.	.	.
3.8	3.6	1519	*	.	.	.	.	.
3.9	3.5	1502	*	.	.	.	.	.
4.0	3.5	1491	*	.	.	.	.	.
4.1	3.5	1484	*	.	.	.	.	.
4.2	3.5	1479	*	.	.	.	.	.
4.3	3.5	1476	*	.	.	.	.	.
4.4	3.5	1474	*	.	.	.	.	.
4.5	3.5	1473	*	.	.	.	.	.
4.6	3.5	1472	*	.	.	.	.	.
4.7	3.5	1472	*	.	.	.	.	.
4.8	3.5	1472	*	.	.	.	.	.
4.9	3.5	1471	*	.	.	.	.	.
5.0	3.5	1471	*	.	.	.	.	.

Sylvester

DISCHARGE HYDROGRAPH FOR BRUSHY FORK ... STATION NUMBER 43
BELOW BRUSHY FORK DAM AT MILE 8.05

GAGE ZERO = 772.00 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 810.49 FEET

FLOOD STAGE NOT AVAILABLE

MAX STAGE = 38.49 FEET AT TIME = .931 HOURS

MAX FLOW = 284862 CFS AT TIME = .869 HOURS

TIME	STAGE	FLOW					
HR	FEET	CFS	0	100000	200000	300000	400000
.0	3.3	1400	*	.	.	.	.
.1	3.3	1400	*	.	.	.	.
.2	3.3	1400	*	.	.	.	.
.3	3.3	1400	*	.	.	.	.
.4	3.3	1406	*	.	.	.	.
.5	3.3	1412	*	.	.	.	.
.6	4.7	3498	*	.	.	.	.
.7	24.6	137695	.	.	*	.	.
.8	35.0	264159	.	.	.	*	.
.9	38.3	283032	.	.	.	*	.
1.0	38.0	253545	.	.	.	*	.
1.1	36.1	211246	.	.	*	.	.
1.2	33.5	170525	.	.	*	.	.
1.3	30.7	135082	.	.	*	.	.
1.4	28.0	105744	.	*	.	.	.
1.5	25.4	82893	.	*	.	.	.
1.6	23.1	64453	.	*	.	.	.
1.7	21.0	50668	.	*	.	.	.
1.8	18.9	40016	.	*	.	.	.
1.9	17.1	31566	.	*	.	.	.
2.0	15.4	25032	.	*	.	.	.
2.1	13.9	20037	.	*	.	.	.
2.2	12.6	16198	.	*	.	.	.
2.3	11.4	13219	.	*	.	.	.
2.4	10.3	10878	.	*	.	.	.
2.5	9.4	9029	.	*	.	.	.
2.6	8.5	7565	.	*	.	.	.
2.7	7.8	6397	.	*	.	.	.
2.8	7.2	5457	.	*	.	.	.
2.9	6.6	4695	*	.	.	.	.
3.0	6.1	4073	*	.	.	.	.
3.1	5.7	3559	*	.	.	.	.
3.2	5.3	3142	*	.	.	.	.
3.3	5.0	2797	*	.	.	.	.
3.4	4.7	2514	*	.	.	.	.
3.5	4.4	2282	*	.	.	.	.
3.6	4.2	2094	*	.	.	.	.
3.7	4.1	1944	*	.	.	.	.
3.8	3.9	1824	*	.	.	.	.
3.9	3.8	1731	*	.	.	.	.
4.0	3.7	1660	*	.	.	.	.
4.1	3.6	1606	*	.	.	.	.
4.2	3.6	1566	*	.	.	.	.
4.3	3.5	1537	*	.	.	.	.
4.4	3.5	1516	*	.	.	.	.
4.5	3.5	1502	*	.	.	.	.
4.6	3.5	1492	*	.	.	.	.
4.7	3.4	1485	*	.	.	.	.
4.8	3.4	1480	*	.	.	.	.
4.9	3.4	1477	*	.	.	.	.
5.0	3.4	1475	*	.	.	.	.

Orgas

DISCHARGE HYDROGRAPH FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

... STATION NUMBER 55
AT MILE 13.35

GAGE ZERO = 720.00 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 759.77 FEET
FLOOD STAGE NOT AVAILABLE

MAX STAGE = 39.77 FEET AT TIME = 1.953 HOURS

MAX FLOW = 116538 CFS AT TIME = 1.641 HOURS

TIME	STAGE	FLOW					
HR	FEET	CFS	0	50000	100000	150000	200000
.0	5.0	1500	*	.	.	.	.
.2	5.0	1500	*	.	.	.	.
.4	5.0	1502	*	.	.	.	.
.6	5.0	1502	*	.	.	.	.
.8	5.0	1507	*	.	.	.	.
1.0	5.1	1520	*	.	.	.	.
1.2	5.0	1500	*	.	.	.	.
1.4	27.1	86224	.	.	*	.	.
1.6	36.1	115882	.	.	.	*	.
1.8	39.2	112214	.	.	.	*	.
2.0	39.7	100661	.	.	.	*	.
2.2	38.9	88210	.	.	*	.	.
2.4	37.4	76704	.	.	*	.	.
2.6	35.6	66592	.	.	*	.	.
2.8	33.7	57754	.	.	*	.	.
3.0	31.8	49994	.	*	.	.	.
3.2	29.8	43198	.	*	.	.	.
3.4	27.9	37264	.	*	.	.	.
3.6	26.1	32060	.	*	.	.	.
3.8	24.3	27478	.	*	.	.	.
4.0	22.5	23425	.	*	.	.	.
4.2	20.8	19832	.	*	.	.	.
4.4	19.2	16617	.	*	.	.	.
4.6	17.6	13858	.	*	.	.	.
4.8	16.2	11511	.	*	.	.	.
5.0	14.7	9535	.	*	.	.	.
5.2	13.4	7884	.	*	.	.	.
5.4	12.2	6521	.	*	.	.	.
5.6	11.1	5404	.	*	.	.	.
5.8	10.1	4501	.	*	.	.	.
6.0	9.2	3778	.	*	.	.	.
6.2	8.3	3206	.	*	.	.	.
6.4	7.6	2762	.	*	.	.	.
6.6	7.0	2422	*	.	.	.	.
6.8	6.6	2168	*	.	.	.	.
7.0	6.2	1981	*	.	.	.	.
7.2	5.9	1848	*	.	.	.	.
7.4	5.7	1754	*	.	.	.	.
7.6	5.5	1690	*	.	.	.	.
7.8	5.4	1648	*	.	.	.	.
8.0	5.3	1620	*	.	.	.	.
8.2	5.3	1602	*	.	.	.	.
8.4	5.2	1590	*	.	.	.	.
8.6	5.2	1583	*	.	.	.	.
8.8	5.2	1579	*	.	.	.	.
9.0	5.2	1576	*	.	.	.	.
9.2	5.2	1574	*	.	.	.	.
9.4	5.2	1574	*	.	.	.	.
9.6	5.2	1573	*	.	.	.	.
9.8	5.2	1573	*	.	.	.	.
10.0	5.2	1573	*	.	.	.	.

Cooper town

DISCHARGE HYDROGRAPH FOR BRUSHY FORK ... STATION NUMBER 70
BELOW BRUSHY FORK DAM AT MILE 15.05

GAGE ZERO = 709.60 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 745.39 FEET

FLOOD STAGE NOT AVAILABLE

MAX STAGE = 35.79 FEET AT TIME = 2.244 HOURS

MAX FLOW = 94527 CFS AT TIME = 2.099 HOURS

TIME	STAGE	FLOW						
HR	FEET	CFS	0	20000	40000	60000	80000	100000
.0	4.6	1500	.*	.	.	.	.	.
.2	4.6	1500	.*	.	.	.	.	.
.4	4.6	1500	.*	.	.	.	.	.
.6	4.6	1500	.*	.	.	.	.	.
.8	4.6	1500	.*	.	.	.	.	.
1.0	4.6	1501	.*	.	.	.	.	.
1.2	4.6	1503	.*	.	.	.	.	.
1.4	4.9	1853	.*	.	.	.	.	.
1.6	20.9	43608	.	.	*	.	.	.
1.8	30.8	81410	.	.	.	.	*	.
2.0	34.7	93608	.	.	.	.	.	*
2.2	35.8	93465	.	.	.	.	.	*
2.4	35.5	88002	.	.	.	.	*	.
2.6	34.5	80473	.	.	.	.	*	.
2.8	33.2	72442	.	.	.	*	.	.
3.0	31.7	64591	.	.	.	*	.	.
3.2	30.1	57214	.	.	.	*	.	.
3.4	28.4	50439	.	.	*	.	.	.
3.6	26.8	44300	.	.	*	.	.	.
3.8	25.2	38779	.	.	*	.	.	.
4.0	23.6	33832	.	.	*	.	.	.
4.2	22.1	29405	.	.	*	.	.	.
4.4	20.6	25442	.	*	.	.	.	.
4.6	19.1	21903	.	*	.	.	.	.
4.8	17.8	18774	.	*	.	.	.	.
5.0	16.4	16034	.	*	.	.	.	.
5.2	15.2	13651	.	*	.	.	.	.
5.4	14.0	11596	.	*	.	.	.	.
5.6	12.8	9835	.	*	.	.	.	.
5.8	11.8	8336	.	*	.	.	.	.
6.0	10.8	7068	.	*	.	.	.	.
6.2	10.0	6002	.	*	.	.	.	.
6.4	9.1	5111	.	*	.	.	.	.
6.6	8.4	4374	.	*	.	.	.	.
6.8	7.8	3767	.	*	.	.	.	.
7.0	7.2	3272	.	*	.	.	.	.
7.2	6.7	2872	.	*	.	.	.	.
7.4	6.3	2554	.	*	.	.	.	.
7.6	5.9	2305	.	*	.	.	.	.
7.8	5.6	2111	.	*	.	.	.	.
8.0	5.4	1962	.	*	.	.	.	.
8.2	5.2	1850	.	*	.	.	.	.
8.4	5.0	1767	.	*	.	.	.	.
8.6	4.9	1707	.	*	.	.	.	.
8.8	4.9	1664	.	*	.	.	.	.
9.0	4.8	1634	.	*	.	.	.	.
9.2	4.8	1613	.	*	.	.	.	.
9.4	4.7	1599	.	*	.	.	.	.
9.6	4.7	1590	.	*	.	.	.	.
9.8	4.7	1583	.	*	.	.	.	.
10.0	4.7	1579	.	*	.	.	.	.

Fosterville

DISCHARGE HYDROGRAPH FOR BRUSHY FORK ... STATION NUMBER 86
 BELOW BRUSHY FORK DAM AT MILE 17.99

GAGE ZERO = 686.40 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 719.78 FEET

FLOOD STAGE NOT AVAILABLE

MAX STAGE = 33.38 FEET AT TIME = 3.056 HOURS

MAX FLOW = 79331 CFS AT TIME = 2.660 HOURS

TIME	STAGE	FLOW						
HR	FEET	CFS	0	20000	40000	60000	80000	100000
.0	4.5	1500	*	.	.	.	.	.
.2	4.5	1500	*	.	.	.	.	.
.4	4.5	1500	*	.	.	.	.	.
.6	4.5	1500	*	.	.	.	.	.
.8	4.5	1500	*	.	.	.	.	.
1.0	4.5	1500	*	.	.	.	.	.
1.2	4.5	1500	*	.	.	.	.	.
1.4	4.5	1500	*	.	.	.	.	.
1.6	4.5	1500	*	.	.	.	.	.
1.8	4.5	1507	*	.	.	.	.	.
2.0	14.4	22810	.	*	.	.	.	.
2.2	24.5	59002	.	.	.	*	.	.
2.4	29.4	74450	.	.	.	.	*	.
2.6	31.8	79174	.	.	.	.	*	.
2.8	33.0	78233	.	.	.	.	*	.
3.0	33.4	74394	.	.	.	.	*	.
3.2	33.3	69219	.	.	.	*	.	.
3.4	32.9	63586	.	.	.	*	.	.
3.6	32.3	57959	.	.	*	.	.	.
3.8	31.5	52565	.	.	*	.	.	.
4.0	30.6	47513	.	.	*	.	.	.
4.2	29.6	42838	.	.	*	.	.	.
4.4	28.5	38553	.	.	*	.	.	.
4.6	27.4	34599	.	.	*	.	.	.
4.8	26.2	30981	.	*	.	.	.	.
5.0	25.0	27665	.	*	.	.	.	.
5.2	23.8	24604	.	*	.	.	.	.
5.4	22.6	21847	.	*	.	.	.	.
5.6	21.3	19315	.	*	.	.	.	.
5.8	20.1	17044	.	*	.	.	.	.
6.0	18.8	14995	.	*	.	.	.	.
6.2	17.6	13177	.	*	.	.	.	.
6.4	16.4	11556	.	*	.	.	.	.
6.6	15.2	10117	.	*	.	.	.	.
6.8	14.1	8843	.	*	.	.	.	.
7.0	13.0	7719	.	*	.	.	.	.
7.2	11.9	6731	.	*	.	.	.	.
7.4	10.9	5866	.	*	.	.	.	.
7.6	10.0	5114	.	*	.	.	.	.
7.8	9.1	4465	.	*	.	.	.	.
8.0	8.3	3909	.	*	.	.	.	.
8.2	7.6	3440	.	*	.	.	.	.
8.4	7.0	3048	.	*	.	.	.	.
8.6	6.5	2726	.	*	.	.	.	.
8.8	6.1	2465	.	*	.	.	.	.
9.0	5.8	2255	.	*	.	.	.	.
9.2	5.5	2090	.	*	.	.	.	.
9.4	5.3	1960	.	*	.	.	.	.
9.6	5.1	1860	.	*	.	.	.	.
9.8	5.0	1783	.	*	.	.	.	.
10.0	4.9	1724	.	*	.	.	.	.

Prenter Road

DISCHARGE HYDROGRAPH FOR BRUSHY FORK ... STATION NUMBER 97
 BELOW BRUSHY FORK DAM AT MILE 19.26

GAGE ZERO = 673.00 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 713.29 FEET
 FLOOD STAGE NOT AVAILABLE

MAX STAGE = 40.29 FEET AT TIME = 3.596 HOURS
 MAX FLOW = 68819 CFS AT TIME = 2.931 HOURS

TIME	STAGE	FLOW	0	20000	40000	60000	80000	100000
HR	FEET	CFS						
1.0	5.5	1500	*	.	.	.	.	.
1.2	5.5	1500	*	.	.	.	.	.
1.4	5.5	1500	*	.	.	.	.	.
1.6	5.5	1500	*	.	.	.	.	.
1.8	5.5	1500	*	.	.	.	.	.
2.0	5.6	1534	*	.	.	.	.	.
2.2	15.0	19328	.	*	.	.	.	.
2.4	26.2	48005	.	.	*	.	.	.
2.6	32.3	62435	.	.	.	*	.	.
2.8	35.9	67996	.	.	.	.	*	.
3.0	38.2	68669	.	.	.	.	*	.
3.2	39.5	66786	.	.	.	.	*	.
3.4	40.1	63589	.	.	.	.	*	.
3.6	40.3	59746	.	.	.	*	.	.
3.8	40.1	55663	.	.	.	*	.	.
4.0	39.7	51572	.	.	*	.	.	.
4.2	39.1	47591	.	.	*	.	.	.
4.4	38.4	43779	.	.	*	.	.	.
4.6	37.5	40157	.	.	*	.	.	.
4.8	36.6	36739	.	.	*	.	.	.
5.0	35.6	33516	.	.	*	.	.	.
5.2	34.5	30504	.	.	*	.	.	.
5.4	33.4	27703	.	.	*	.	.	.
5.6	32.2	25092	.	.	*	.	.	.
5.8	31.1	22693	.	.	*	.	.	.
6.0	29.9	20463	.	*	.	.	.	.
6.2	28.7	18433	.	*	.	.	.	.
6.4	27.5	16576	.	*	.	.	.	.
6.6	26.3	14886	.	*	.	.	.	.
6.8	25.1	13351	.	*	.	.	.	.
7.0	23.9	11957	.	*	.	.	.	.
7.2	22.7	10696	.	*	.	.	.	.
7.4	21.5	9555	.	*	.	.	.	.
7.6	20.4	8527	.	*	.	.	.	.
7.8	19.2	7601	.	*	.	.	.	.
8.0	18.1	6771	.	*	.	.	.	.
8.2	17.0	6028	.	*	.	.	.	.
8.4	15.9	5366	.	*	.	.	.	.
8.6	14.9	4778	.	*	.	.	.	.
8.8	13.9	4259	.	*	.	.	.	.
9.0	12.9	3804	.	*	.	.	.	.
9.2	11.9	3405	.	*	.	.	.	.
9.4	11.0	3061	.	*	.	.	.	.
9.6	10.2	2764	.	*	.	.	.	.
9.8	9.4	2508	.	*	.	.	.	.
10.0	8.7	2293	.	*	.	.	.	.
10.2	8.1	2114	.	*	.	.	.	.
10.4	7.5	1970	.	*	.	.	.	.
10.6	7.1	1860	.	*	.	.	.	.
10.8	6.7	1778	.	*	.	.	.	.
11.0	6.5	1718	.	*	.	.	.	.

Comfort

DISCHARGE HYDROGRAPH FOR BRUSHY FORK ... STATION NUMBER 102
 BELOW BRUSHY FORK DAM AT MILE 21.16

GAGE ZERO = 665.14 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 706.02 FEET
 FLOOD STAGE NOT AVAILABLE
 MAX STAGE = 40.87 FEET AT TIME = 4.096 HOURS
 MAX FLOW = 56956 CFS AT TIME = 3.472 HOURS

TIME	STAGE	FLOW						
HR	FEET	CFS	0	20000	40000	60000	80000	100000
1.00	5.0	1500	.*	.	.	.	.	.
1.25	5.0	1500	.*	.	.	.	.	.
1.50	5.0	1500	.*	.	.	.	.	.
1.75	5.0	1500	.*	.	.	.	.	.
2.00	5.0	1500	.*	.	.	.	.	.
2.25	5.0	1518	.*	.	.	.	.	.
2.50	13.5	14956	.	*	.	.	.	.
2.75	25.7	37756	.	.	*	.	.	.
3.00	32.8	50444	.	.	.	*	.	.
3.25	36.9	55839	.	.	.	*	.	.
3.50	39.2	56936	.	.	.	*	.	.
3.75	40.4	55736	.	.	.	*	.	.
4.00	40.8	53294	.	.	.	*	.	.
4.25	40.8	50179	.	.	.	*	.	.
4.50	40.4	46736	.	.	.	*	.	.
4.75	39.7	43185	.	.	.	*	.	.
5.00	38.9	39667	.	.	.	*	.	.
5.25	37.9	36267	.	.	.	*	.	.
5.50	36.8	33030	.	.	.	*	.	.
5.75	35.6	29980	.	.	.	*	.	.
6.00	34.3	27133	.	.	.	*	.	.
6.25	33.0	24492	.	.	.	*	.	.
6.50	31.7	22064	.	.	.	*	.	.
6.75	30.3	19844	.	.	.	*	.	.
7.00	28.9	17823	.	.	.	*	.	.
7.25	27.6	15987	.	.	.	*	.	.
7.50	26.2	14326	.	.	.	*	.	.
7.75	24.8	12828	.	.	.	*	.	.
8.00	23.5	11478	.	.	.	*	.	.
8.25	22.1	10267	.	.	.	*	.	.
8.50	20.8	9181	.	.	.	*	.	.
8.75	19.4	8209	.	.	.	*	.	.
9.00	18.1	7340	.	.	.	*	.	.
9.25	16.9	6565	.	.	.	*	.	.
9.50	15.6	5844	.	.	.	*	.	.
9.75	14.5	5133	.	.	.	*	.	.
10.00	13.4	4511	.	.	.	*	.	.
10.25	12.4	3992	.	.	.	*	.	.
10.50	11.5	3557	.	.	.	*	.	.
10.75	10.6	3194	.	.	.	*	.	.
11.00	9.8	2890	.	.	.	*	.	.
11.25	9.1	2636	.	.	.	*	.	.
11.50	8.4	2424	.	.	.	*	.	.
11.75	7.9	2246	.	.	.	*	.	.
12.00	7.4	2100	.	.	.	*	.	.
12.25	6.9	1980	.	.	.	*	.	.
12.50	6.5	1883	.	.	.	*	.	.
12.75	6.2	1805	.	.	.	*	.	.
13.00	6.0	1745	.	.	.	*	.	.
13.25	5.8	1699	.	.	.	*	.	.

Bloomingrose

DISCHARGE HYDROGRAPH FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

... STATION NUMBER 108
AT MILE 23.27

GAGE ZERO = 657.00 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 697.31 FEET

FLOOD STAGE NOT AVAILABLE

MAX STAGE = 40.31 FEET AT TIME = 4.699 HOURS

MAX FLOW = 49176 CFS AT TIME = 4.075 HOURS

TIME	STAGE	FLOW						
HR	FEET	CFS	0	10000	20000	30000	40000	50000
.0	5.4	1500	.	*	.	.	.	.
.5	5.4	1500	.	*	.	.	.	.
1.0	5.4	1500	.	*	.	.	.	.
1.5	5.4	1500	.	*	.	.	.	.
2.0	5.4	1500	.	*	.	.	.	.
2.5	5.4	1502	.	*	.	.	.	.
3.0	21.2	25693	.	.	.	*	.	.
3.5	33.6	43373	.	.	.	.	*	.
4.0	38.6	49102	.	.	.	.	.	*
4.5	40.2	47438	.	.	.	.	.	*
5.0	40.1	42997	.	.	.	.	*	.
5.5	39.0	37735	.	.	.	.	.	.
6.0	37.3	32427	.	.	.	*	.	.
6.5	35.3	27454	.	.	.	*	.	.
7.0	33.0	23011	.	.	.	*	.	.
7.5	30.7	19146	.	.	*	.	.	.
8.0	28.4	15850	.	.	*	.	.	.
8.5	26.0	13063	.	.	*	.	.	.
9.0	23.7	10714	.	.	*	.	.	.
9.5	21.5	8673	.	.	*	.	.	.
10.0	19.4	6997	.	*	.	.	.	.
10.5	17.4	5725	.	*	.	.	.	.
11.0	15.6	4764	.	*	.	.	.	.
11.5	14.0	4029	.	*	.	.	.	.
12.0	12.5	3454	.	*	.	.	.	.
12.5	11.1	2997	.	*	.	.	.	.
13.0	9.9	2631	.	*	.	.	.	.
13.5	8.9	2339	.	*	.	.	.	.
14.0	8.0	2110	.	*	.	.	.	.

Racine

DISCHARGE HYDROGRAPH FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

... STATION NUMBER 116
AT MILE 25.48

GAGE ZERO = 648.20 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 687.84 FEET
FLOOD STAGE NOT AVAILABLE

MAX STAGE = 39.64 FEET AT TIME = 5.323 HOURS

MAX FLOW = 43303 CFS AT TIME = 4.761 HOURS

TIME	STAGE	FLOW						
HR	FEET	CFS	0	10000	20000	30000	40000	50000
.0	7.5	1500	.	*	.	.	.	.
.5	7.5	1500	.	*	.	.	.	.
1.0	7.5	1500	.	*	.	.	.	.
1.5	7.5	1500	.	*	.	.	.	.
2.0	7.5	1500	.	*	.	.	.	.
2.5	7.5	1500	.	*	.	.	.	.
3.0	8.3	2394	.	*	.	.	.	.
3.5	24.2	23630	.	.	.	*	.	.
4.0	33.2	37519	.	.	.	.	*	.
4.5	37.7	42756	.	.	.	.	.	*
5.0	39.4	42894	.	.	.	.	.	*
5.5	39.6	40219	.	.	.	.	*	.
6.0	38.9	36283	.	.	.	.	*	.
6.5	37.7	31956	.	.	.	*	.	.
7.0	36.2	27690	.	.	.	.	.	.
7.5	34.6	23728	.	.	*	.	.	.
8.0	32.8	20180	.	.	*	.	.	.
8.5	31.0	17019	.	.	*	.	.	.
9.0	29.2	14246	.	*	.	.	.	.
9.5	27.5	11899	.	*	.	.	.	.
10.0	25.7	9920	.	*	.	.	.	.
10.5	24.0	8336	.	*	.	.	.	.
11.0	22.3	7089	.	*	.	.	.	.
11.5	20.6	6102	.	*	.	.	.	.
12.0	19.0	5304	.	*	.	.	.	.
12.5	17.5	4644	.	*	.	.	.	.
13.0	16.1	4086	.	*	.	.	.	.
13.5	14.7	3609	.	*	.	.	.	.
14.0	13.5	3200	.	*	.	.	.	.

Paytona

DISCHARGE HYDROGRAPH FOR BRUSHY FORK
BELOW BRUSHY FORK DAM

... STATION NUMBER 120
AT MILE 26.61

GAGE ZERO = 643.83 FEET MAX ELEVATION REACHED BY FLOOD WAVE = 682.61 FEET
FLOOD STAGE NOT AVAILABLE
MAX STAGE = 38.78 FEET AT TIME = 5.801 HOURS
MAX FLOW = 41393 CFS AT TIME = 5.032 HOURS

TIME HR	STAGE FEET	FLOW CFS	0	10000	20000	30000	40000	50000
.0	6.9	1500	*	.	.	.	.	.
.5	6.9	1500	*	.	.	.	.	.
1.0	6.9	1500	*	.	.	.	.	.
1.5	6.9	1500	*	.	.	.	.	.
2.0	6.9	1500	*	.	.	.	.	.
2.5	6.9	1500	*	.	.	.	.	.
3.0	6.9	1504	*	.	.	.	.	.
3.5	17.0	13390	.	*	.	.	.	.
4.0	28.3	30239	.	.	.	*	.	.
4.5	34.4	38873	.	.	.	.	*	.
5.0	37.5	41386	.	.	.	.	*	.
5.5	38.6	40112	.	.	.	.	*	*
6.0	38.7	37012	.	.	.	.	*	.
6.5	38.1	33175	.	.	.	*	.	.
7.0	37.2	29187	.	.	.	*	.	.
7.5	35.9	25359	.	.	*	.	.	.
8.0	34.6	21846	.	.	*	.	.	.
8.5	33.1	18639	.	.	*	.	.	.
9.0	31.7	15793	.	*	.	.	.	.
9.5	30.2	13436	.	*	.	.	.	.
10.0	28.7	11443	.	*	.	.	.	.
10.5	27.0	9800	.	*	.	.	.	.
11.0	25.4	8473	.	*	.	.	.	.
11.5	23.8	7398	.	*	.	.	.	.
12.0	22.2	6511	.	*	.	.	.	.
12.5	20.6	5764	.	*	.	.	.	.
13.0	19.1	5122	.	*	.	.	.	.
13.5	17.6	4562	.	*	.	.	.	.
14.0	16.2	4067	*	.	.	.	.	.